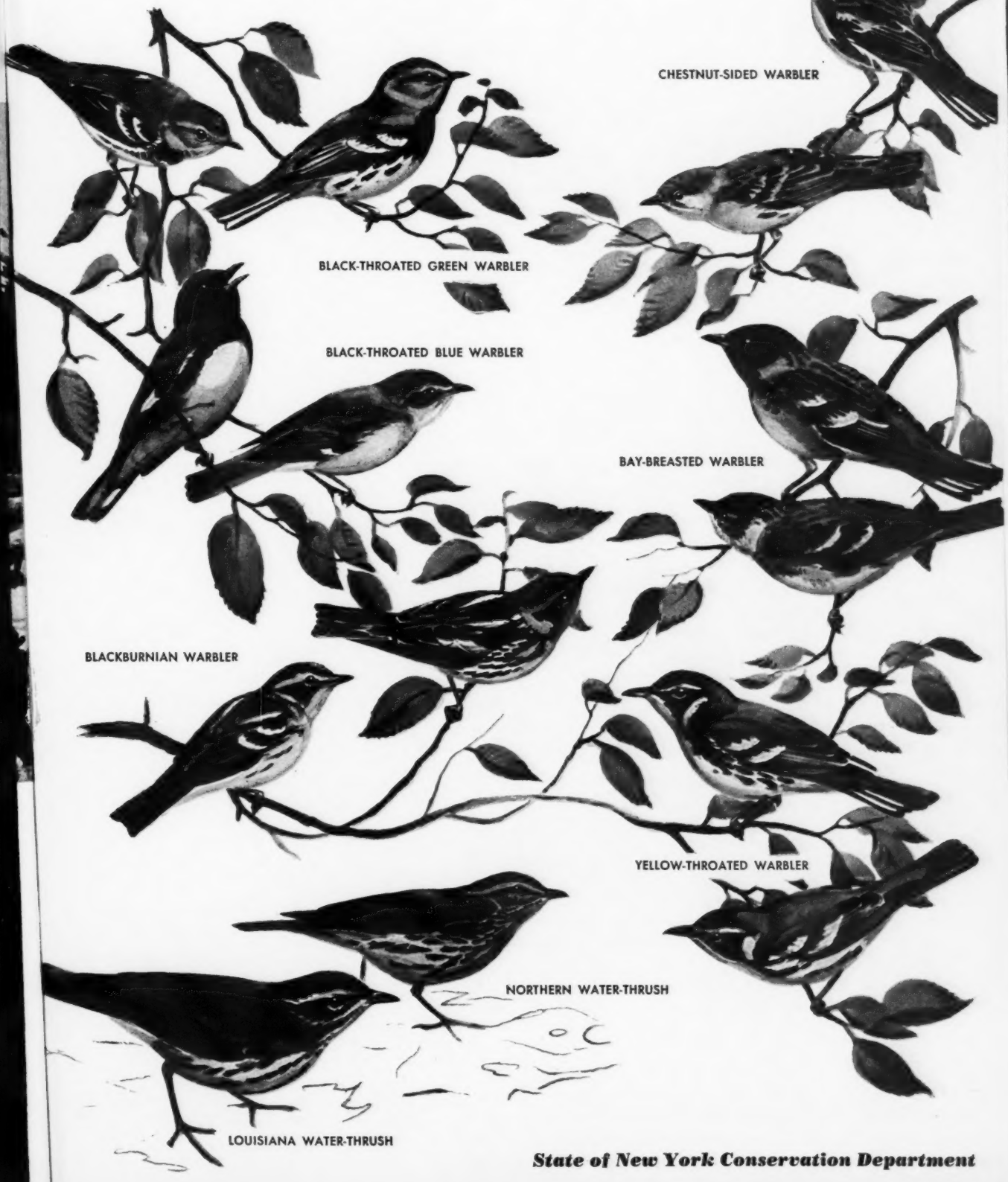
The New York State
Conservationist
April-May 1955



State of New York Conservation Department

Dear Subscriber:

We must talk business

We come directly to the point: We feel it is no longer good business nor sound government fiscal policy to continue to sell our magazine at the old price of one dollar per year. As of May 1, new subscription rates will go into effect whereby you can subscribe for one year at a cost of two dollars, or for three years at a cost of five dollars. Single copies of current and back issues (if available) will be priced at 50 cents each. But applications postmarked May 1 or earlier, both for new subscriptions and renewals, will be processed at the old price of one dollar per year (so you still have time to get in under the wire), and of course we will continue to honor long term subscriptions already in our files.

So we're going to charge you more. But we're also going to give you more for your money. You will notice that this issue of the magazine is bigger by eight pages than any we've published to date, and we intend to continue this practice in all subsequent issues. We will use this additional space to provide more of what our subscribers seem to like best: More *Letters to the Editor*, more short material in the *Back of the Book*, and also more feature copy.

We're offering, then, a bigger magazine, and what we hope will be a better one. But yes, it will be more expensive.

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Before we arrived at these decisions there was careful thinking done here in the Department. It was never intended that our magazine should be a money-making proposition, and there is no such intention now. Rather, we have always thought of THE CONSERVATIONIST as a public service, as a program of the Department no less effective and no less worthy of public support than other programs of the Department aimed at the same target—the promotion of Conservation in New York. By publishing articles on farm ponds, for example, it seems we've encouraged a lot of people to go ahead and build them; beyond that, by publishing an attractive and informative magazine, we've tried to draw the attention of a lot of people who up to now have not recognized conservation as being within their own fields of interest. That effort seems to be paying off too.

But to make our magazine both attractive and informative; to price it within the reach of all the people we really want to reach—and at the same time strike a nice balance with healthy government financing—that has been our problem. We have done the best we could to meet it, and all we can do now is sit back and hope that our subscribers will think well enough of our magazine to continue to support it.

In that connection, one last thought: Everything else has gone up in price since we started publication nine years ago; sooner or later it had to happen here. —Editor

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Contents

VOLUME 9 NUMBER 5
APRIL-MAY, 1955

First Cover		*H. Wayne Trimm*
Second Cover		*Herbert Buckley*
MORE WATER FOR NEW YORK CITY	2	*Cecil E. Heacox*
deRUYTER RESERVOIR	6	*A. C. Petty*
THE HAUL SEINERS	7	*Warren F. Rathjen*
RABIES	8	*Ralph Colson, Dr. W. S. Stone, Dr. Donald J. Dean*
TIOGA COUNTY	13	*Roy Irving*
THE DEER CASE ON SOUTH CLOVE MT.	14	*James Schulhoff*
OUR CAMP PROGRAM	14	*Nick Drahos*
SPORTSMEN'S CONSERVATION WORKSHOP	16	*Lawrence S. Hamilton*
THE HART'S TONGUE FERN	17	*Dr. Mildred E. Faust*
SPOTLIGHT ON NEW YORK'S DEER HERD	18	*A. W. Bromley*
PONDS (2)—WHERE TO OBTAIN ASSISTANCE	19	*Roy Irving*
MORE ABOUT STATE FORESTS	21	*Charles F. Baar*
THE COLLEGE ELMS	22	*Jerome G. Kovalcik*
OUR WARBLERS	23	*H. Wayne Trimm*
Outside covers and center spread		*H. Wayne Trimm*
LAKE TROUT	26	*C. W. Greene*
CAYUGA—A LAKE TROUT LABORATORY	29	*Dwight A. Webster*
THE BACK OF THE BOOK	32	*(Scatter Shots, Etc.)*
LETTERS TO THE EDITOR	40	*(From Our Readers)*
SPRING DRUMMER	48	*Clayt Seagears*
Third Cover		*Clayt Seagears*
Fourth Cover		*H. Wayne Trimm*

STATE OF NEW YORK, AVERELL HARRIMAN, *Governor*
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Aerial view of site of Cannonsville Reservoir. Black line shows dam location

More Water for New York City

A Progress Report*

FOR several years, there's been plenty in the headlines about New York City's water supply problems and plans. Behind those headlines is a fascinating story of special interest to every conservationist in the State.

Quenching the thirst of Gotham's 8,000,000 people is a big job whether you figure it in size (over 32,000 acres of reservoirs), amount of water consumed (1,160,000,000 gallons a day) or costs ($800,000,000 since the City's water supply system was first started before the Civil War). It now looks as if the job was licked—at least to the year 2000. In licking the job, however, New York City has reached out into a traditionally recreational area, the Catskills, a region famous for its hunting and fishing. It is natural, therefore, that nimrods and Waltons look upon this expansion with concern, even anxiety.

For a fuller understanding of the present status of the City's water supply situation, it is necessary to go back 50 years to the time when the New York City Board of Water Supply was created. (There is also a New York City Department of Water Supply, Gas and Electricity — a municipal administrative agency which operates the reservoirs after they have been built by the Board of Water Supply.) Early studies by the Board resulted in the selection of the Catskill area as the best source for a pure, potable, gravity-fed water supply. Accordingly Ashokan Reservoir was built in 1915. It was soon realized that more reservoirs would be needed to keep pace with the City's rapidly expanding population. Schoharie Reservoir was added to the Catskill System in 1926, but the engineers' eyes soon turned to the Delaware Watershed as a source of additional water, and a plan which provided for reservoirs on the Rondout, the Neversink and the East Branch of the Delaware River was developed. The plan was approved by the State Water Power and Control Commission (1929) but objections by New Jersey and Pennsylvania led to the U. S. Supreme Court case which contains Justice Holmes' famous phrase: "A river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those who have power over it."

The decision of the Supreme Court rendered in 1931 gave New York City permission to take a certain amount of water (440 million gallons a day) and the Court retained jurisdiction of the case—which would enable the City to appeal if future needs justified such action. The 1931 decision gave the green light to the City to

* "Liquid Assets," *The Conservationist*, J-J,1950 (Reprint No. 113) presented some of the basic conservation problems involved in the operation of the world's largest water supply system. This article brings the picture up-to-date with regard to the expansion of New York City's water supply system and what the Conservation Department and the sportsmen of the State are doing to meet the resulting problems.—Editor

start the Delaware System which, although delayed by the economic depression of the '30's and World War II, is now partially in use. The need for additional water remained, however, and plans then were made by the Board of Water Supply for still another reservoir on the West Branch of the Delaware River near Cannonsville. The new plan was submitted to the State Water Power and Control Commission in January, 1950. After lengthy hearings, in which other sources (especially the Hudson River) were proposed by opponents of the Cannonsville project, the Commission gave a favorable decision, subject, of course, to the approval of the Supreme Court. Soon after, New York submitted the case to the Court and the latter's decision was announced June 7, 1954.

Sportsmen will be interested in some of the provisions of the decision:

1. It permits New York City to take additional water from the Delaware Watershed, the amount increasing with the completion of installations now under construction to the time when Cannonsville is completed, when a total of 800 mgd (million gallons per day) may be diverted.

2. Of especial benefit to anglers—the lower Delaware has some of the best smallmouth bass fishing in the State—is a provision, known as the "Montague Formula," for compensating water releases below reservoirs. Montague is located eight miles below Port Jervis on the New Jersey side of the Delaware River, and the U.S. Geological Survey maintains a stream flow gauging station there. The complete Montague Formula is too complicated to give in detail but, in effect, it insures that in times of drought more water than would be possible with natural stream flow, will be available to streams below the reservoirs. Thus, it will be necessary for New York City to plan its reservoir storage so it can utilize authorized diversions, but still maintain the required stream flow below the dams.

3. With even greater interest, sportsmen will watch the results of another unique provision of the Supreme Court decision: A "River Master" will be required. River Masters have been employed to some extent in the Western states, but the idea is new in the East; this in fact is the first time we've had one. The Court has selected the Chief Hydraulic Engineer of the U.S. Geological Survey as River Master, and it is his responsibility to administer the provisions of the decree relating to yields, diversions and releases. Thus an impartial agency assumes a decisive role, insuring the greatest possible compliance with the provisions of the Court's decree.

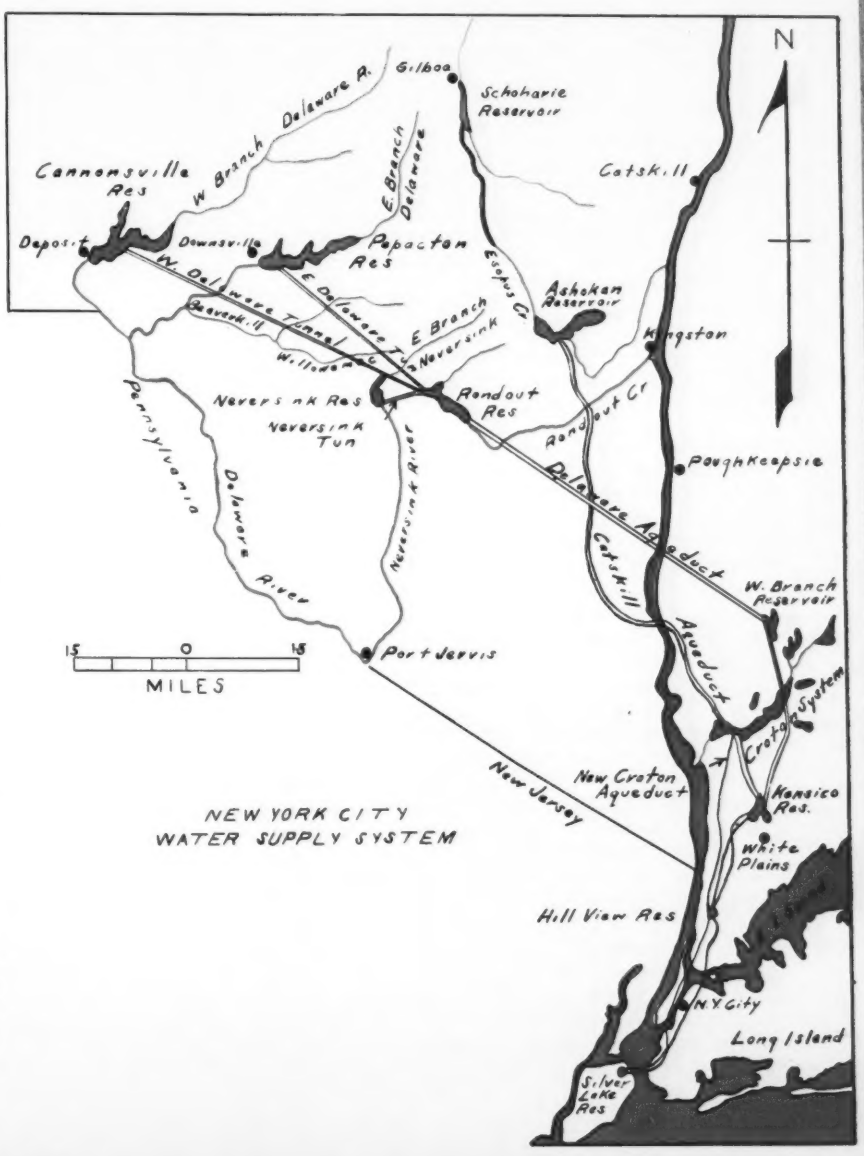
4. As noted here, the Supreme Court retains jurisdiction of the case. Thus, if the water needs of the City change or other modifications of the present decree are indicated, the neighboring states, the general public and conservationists can be assured that the problems will be resolved at the same high level as in the past.

Water Supply and Conservation

Another side of the story consists of the negotiations in which both sportsmen and Conservation Department representatives have taken part.

The Water Power and Control Commission's hearing on the Cannonsville Reservoir (1950) provided an excellent opportunity for local sportsmen and the district men of the Conservation Department to present the case for hunting, fishing and allied recreations—as well as for some of the physical, chemical and biological requirements of fish life. As a result, provisions for hunting (not previously permitted on City reservoir lands) as well as fishing were incorporated into the decision of the Commission. The decision also provided that barrier dams on the tributaries be built on City property by the Board of Water Supply if deemed necessary by the Conservation Department.

But, most important of all (and especially to fishermen) is the provision for a minimum flow below the dam. Most of the time the Montague Formula will provide an ample supply of water for fish life. There may be times, however, when water manipulations might create a situation whereby the Montague requirements could be met, and yet there would be no flow directly below one or more of the Delaware System reservoirs.



In the interest of protecting fish life, this possibility was discussed with engineers and a special formula was developed for the preservation of fish on such occasions. This formula is the first in the history of water supply in New York State whereby water releases solely for the protection of fish life were incorporated into the decision of the Water Power and Control Commission and the City Board of Water Supply.

In 1931, when the Rondout, Neversink and Pepacton reservoirs were under consideration, no such protection was provided. But after the Cannonsville agreement the Board offered to consider these situations retroactively, and similar minimum flow formulae were developed for these reservoirs. At Neversink and Pepacton, the plans were redesigned to incorporate the change, but at Rondout, construction had advanced to such a point that the new design could not be applied; City officials, however, have signified their willingness to attempt to maintain the minimum flow formula with existing facilities.

This attitude of co-operation has been typical of the water supply officials from the beginning of negotiations. Another outstanding example arose in connection with the building of the Delaware Tunnel from Pepacton to Rondout. Shafts were located on both the Beaver Kill and Willowemoc. To protect these important trout streams from the adverse effects of spoilage, etc., settling basins, adding (in each case) over $50,000 to the costs, were part of the project. To our knowledge this is the first time that such a provision was actually written into the specifications.

BACK in 1905, when Father Knickerbocker began reaching out far beyond the City for sources of water supply, a far-sighted legislator named James K. Apgar, of Westchester, did the sportsmen of the State a very great favor by sponsoring a bill which makes it mandatory to permit fishing (also boating and ice cutting) on reservoirs or natural lakes used by New York City for water supply—"subject to reasonable rules and regulations."

Over the years, there had been a growing need for revision of these regulations (administered by the N.Y. City Department of Water Supply, Gas and Electricity). As a result of friendly roundtable discussions, new regulations—more realistic and more in keeping with changed conditions — were promulgated, made into a more readable format and put into effect with the 1952 fishing season.

In an even more significant development, it was the sportsmen of the State who played the major role. Field studies in connection with the new reservoirs revealed unusual conditions which, in the

Left: Construction of Downsville Dam showing downstream rolled embankment with sheepsfoot rollers. Below, left: Neversink Tunnel steel roof support completed; track for concrete train; dark streak is conveyor belt to mixing tubs. Bottom left: Stilling basin below Dam, Pepacton Reservoir. Below, right: Seining fish for transfer from stilling basin.

interests of better fisheries' management, in many cases required immediate attention. The need for more flexibility in management than currently existed under the Conservation Law was clear. Again through informal discussions between representatives of the New York City Department of Water Supply, Gas and Electricity and the Conservation Department, the groundwork was laid so an appropriate bill could be presented to the Legislature. The New York State Conservation Council did yeoman service in supporting the bill, and a law giving the Conservation Department the power (subject to approval by the New York City Department of Water Supply, Gas and Electricity) to regulate open seasons, minimum size limits, manner of taking and daily and seasonal limits for taking fish in the New York City water supply reservoirs went into effect July 1, 1954.

First use of the new law was made last winter, when fishing through the ice with tip-ups was permitted on two reservoirs, Lake Glenida and Cross River. These are waters inhabited by trout, so that fishing with tip-ups would ordinarily be prohibited. But from the point of view of better fisheries management it is hoped that by harvesting more pickerel, perch and other competitive species, trout fishing can be improved. Again on the fishermen's side, this liberalization provides added sport to many who think ice fishing the best fishing of all.

Field Investigations

Field studies on the new reservoirs furnished another opportunity for sportsmen and the Conservation Department to share in an important job. On the Croton and Catskill systems, studies had to be made long after the reservoirs were put into use simply because the Department did not have field workers in fisheries in those days. Now, for the first time, investigations have been possible before impoundment, and many sportsmen have worked as members of the field crews on these jobs.

In addition to an evaluation of environmental conditions on the Rondout, Neversink and East Branch, important data were obtained on the composition and characteristics of existing fish populations. For direct comparison, similar studies were made on established "reservoir-stream" units, viz: Ashokan-Esopus and Gilboa-Schoharie. With this information, it has been possible to make tentative management recommendations for the new reservoirs and their tributary streams. In the beginning, brook trout will be emphasized in the Rondout, salmon and brown trout in the Neversink and brown trout in the Pepacton. Here the regulatory authority recently granted the Conservation Department will be especially helpful; management can be more readily adjusted to meet conditions which will inevitably change with the passage of time.

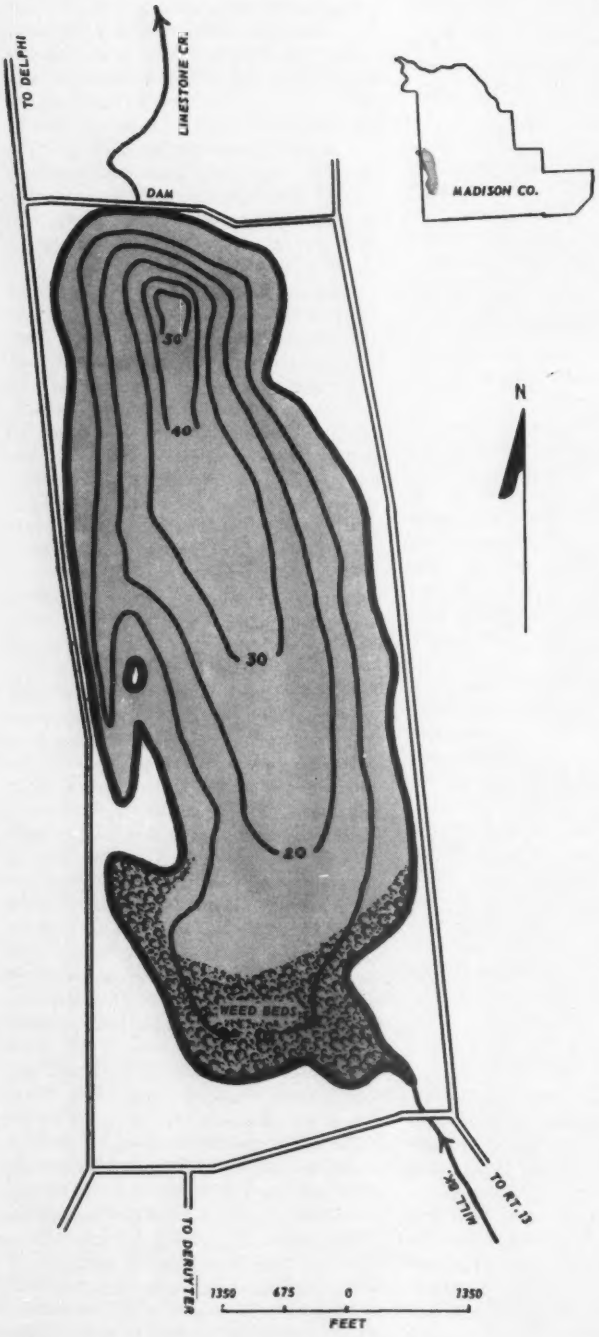
Sportsmen have also helped on one of the most difficult fish salvage jobs on record. When construction on a dam is nearing completion, the diversion tunnel, which turns the main stream aside so work can proceed, is sealed off and the stilling chamber below the dam de-watered so control valves can be installed. It is during this de-watering period that salvage work is necessary. It's usually difficult to operate a net or electric shocker efficiently under such conditions, and even more difficult to hoist the fish taken to the waiting tank truck. But sportsmen volunteers have made this job a lot easier.

THE new reservoirs will offer some exciting fishing both to the trout fishermen and to those who prefer bass, pike and other warm-water species. To the stream fishermen, of course, no amount of reservoir fishing, no matter how good, will ever replace the thrill of standing hip deep in fast water. Yet, in the over-all picture the new reservoirs—with that extra boost of initial fertility—will produce many more fish and bigger fish than the streams they inundate. Lots of trout in the large economy size can be expected to be caught a few years after flooding takes place. Ashokan Reservoir, you will recall, established the New York State brown trout record (19 lbs., 14 oz.) less than four years after being put into operation, a record which held for 31 years.

Eventually, however, despite the most intensive management possible, warm-water species will probably dominate the fish populations of all the new reservoirs. If and when that situation materializes, fishermen can help most by doing what comes naturally. It has been pretty well established that, under such conditions, intensive harvesting each season keeps warm-water fish populations in good balance and affords the maximum annual sustained yield. Thus, *more fishing by more fishermen makes better fishing.*

—CECIL E. HEACOX,
Senior Aquatic Biologist

deRuyter Reservoir



LOCATION

On the Madison-Onondaga counties' line about eight miles south of Cazenovia

GENERAL

DeRuyter Reservoir was built as a canal feeder and it still functions in this capacity. Scale studies indicate that fish are making fairly good growth. Pike-perch is the principal game fish and is taken by both Summer anglers and through the ice by Winter fishermen. Fishermen report catches of large size bullheads here. Boats are available for rent at the Reservoir.

PHYSICAL FEATURES

Area: 576 acres
Elevation: 1,280 feet
Maximum Depth: 53 feet
Bottom Composition: Largely mud and clay
Outlet: At north end through dam
Shoreline: Sparsely wooded with numerous cottages

CHEMICAL CHARACTERISTICS

Oxygen Content: Well supplied at all depths
pH: Alkaline; 7.8-8.5

FISHES PRESENT

Pike-perch
Smallmouth bass
Chain pickerel
Yellow perch
Rock bass
Bullhead
Common sunfish
Common sucker
Johnny darter
Ling
Various minnows

—A. C. Petty,
District Fisheries Manager

The Haul Seiners

AMONG the remnants of a once thriving commercial fishing industry on Long Island are the beach haul seiners. Some of the men working in this fishery can trace their lineage back to the shore whaling crews that disappeared from these same beaches well over one hundred years ago.

The difficulties and hardships involved in this type of fishery keep the number of active crews down to a relatively small group. Other types of fishing, and the desire for more secure forms of endeavor, have lured many former seiners away from the beaches. As with other fishermen, the haul seiners' lot is often one of "feast or famine," and ironically, the same amount of effort is required for either end result.

The methods used have changed very little during the past century, the only major change being the replacement of horses by gas driven vehicles for the actual hauling of the seines. However, to this day, some of the nets are still retrieved by manpower.

The seine used measures up to three hundred fathoms (1,800 feet to the landlubber) in length. This is carefully loaded into the stern of a dory about twenty feet in length. The four-man crew teams up to launch the dory into the surf, which may often be running quite high. Upon launching, the three-man crew strikes off through the breakers, the fourth remaining on the beach to tend one end of the net. When safely underway, two of the men in the dory row and the third feeds the net over the stern as headway is gained. When the net is about three-fourths out, the dory heads for the beach several hundred yards from the point of launching. Once back on the beach, two men go to each end of the seine and begin simultaneously to haul in their respective sections of the net. This work is usually aided by vehicles capable of operating on loose sand. Near the center of the net is a "bag," an enlarged portion that receives the majority of the catch. When the "wings" (or extremities of the net) have been recovered, the men join forces and haul in the "bag." They then remove marketable species; undersized fish are promptly removed from the net and returned to sea.

Very often, in hauling the seine, underwater debris is encountered, tearing the net and allowing the entire catch to escape. Even more frequently, the bottom or "lead line" becomes buried in the soft bottom, which necessitates handling the net in such a manner that most of the fish regain their freedom.

The never ceasing activity of the surf causes continuous changes in the beach. Because of this, the fishermen are never sure of a good seining location. And furthermore, it is not unusual for a crew of haul seiners to spend more time in repairing nets ripped by wrecks and other obstacles than in fishing.

It becomes apparent that these hindrances, coupled with extended periods of bad weather which make it impossible to work in the surf, are restraining factors, preventing haul seining from creating a serious drain on the species of fish commonly taken. And as noted above, these same factors are largely responsible for the decline in a romantic and colorful — if controversial — enterprise which certainly has a rightful place in the history of Long Island.

—WARREN F. RATHJEN,
Aquatic Biologist (Marine)

Rabies

Department of Conservation:

THE advent of wildlife rabies in New York and the concomitant rise of rabies in cattle and other species of animals prompted the establishment in 1946 of an Interdepartmental Rabies Committee composed of representatives from the Conservation Department, the Department of Agriculture and Markets and the Department of Health. This action was based on the recognition that rabies control was clearly the responsibility of all three departments.

Under this broad Interdepartmental Committee, responsibility for the paramount wildlife problem rests principally with the Conservation Department, while responsibility for dog licensing, dog control, and the payment of indemnities for domestic animals dying of rabies belongs to the Department of Agriculture and Markets. For its part, the Department of Health administers and conducts the canine vaccination program and oversees the human health aspects of rabies by making certain that individuals bitten by rabid animals are offered prompt and adequate treatment.

Statements from each of the three State departments follow.

THE occurrence of rabies in wild animals is not a recent development. Rabid wolves plagued Europe and Russia for centuries, jackals carried the disease in Africa, and the vampire bat has been instrumental in causing a high incidence of rabies in South and Central America. Some references claim that the first human case to be treated by Louis Pasteur's preventive vaccine was a peasant boy bitten by a rabid wolf.

The present outbreak of rabies in wildlife in New York seems to have started in August, 1945 when rabies appeared, first in dogs and then in foxes in Broome County. By the end of that year a total of 50 rabid foxes had been verified by laboratory examination from three south-central counties. The large proportion of rabid foxes which were found in comparison to other infected wildlife, such as raccoons and skunks, made it apparent that foxes were primarily responsible for transmission of the disease.

One of the prerequisites for any disease to reach epidemic proportions in wild animals is the existence of a high abundance of the susceptible species. This requirement was certainly met in south-central New York since fox abundance, due to a combination of favorable factors, was probably approaching an all time high. Chief among these factors were the large amount of abandoned argricultural lands which provided excellent habitat, and the extremely low value of fox pelts which materially reduced trapping incentive.

It was obvious that in order to control rabies in wild foxes it would be necessary to bring about a reduction in the fox population. If the spread of the disease to adjacent areas could be halted, it was felt that the disease itself would decimate the foxes within the infected area and cause the epidemic to subside of its own accord.

Consequently, in March, 1946 the Conservation Department assigned four State trappers to undertake an experimental trapping program aimed at containing the outbreak — which was still confined to three counties. These men were assigned to trap foxes in a band around the edge of the area from which rabid foxes were being reported. The objective was to remove the foxes from a zone 5 to 10 miles in width around the focus of infection to stop its spread, just as the building of a firebreak removes the inflammable material from the path of a forest fire. But it became apparent after a few months that four men could not adequately trap this strip, at least not quickly enough to prevent the disease from spreading. The trapping appeared to be effective in some areas, but in other places rabid foxes began appearing outside of the trapped zone, necessitating shifts in the trap lines. An appeal was made for additional funds, and in October, 1946 the trapping force was increased to 11 men. For reasons unknown at the time, this enlarged trapping effort was unsuccessful, for by the end of 1946 the infection in foxes had spread from three to eight contiguous counties in central New York. By the end of 1947 the number of such counties had increased to 16 in spite of an increased trapping program during that year.

As a result of the increase in the seriousness of the rabies epidemic in wild foxes during 1946 and 1947 additional funds were made available to carry out control measures through fox trapping. Each year also provided additional experience and opportunities to evaluate results. The control measures being used today have evolved from the original concept of encirclement, to what we now refer to as "zones of fox scarcity" which are 50 or more miles in width rather than 5 to 10.

These zones are established and maintained, through a force of about 20 experienced trappers, along the western and northern edges of the intected area, taking advantage of natural barriers to fox movement such as the Finger Lakes, Lake Ontario, and the Adirondack wilderness where foxes relatively, are not numerous. During 1954 the trappers removed over 5,200 foxes from the zones of fox scarcity, bringing the total number of foxes taken under the program since 1946 to over 38,000.

The need for the 50 mile-wide zone was demonstrated by findings of William Sheldon, a graduate student at Cornell, who, between 1946 and 1948, studied fox movements and travel radius. He live-trapped foxes and placed metal collars on them before release in order to find out how far foxes travel. Several of Sheldon's marked foxes were recovered at distances in excess of 50 miles from the point of original capture, although the greatest movement for periods up to two months was 40 miles. These movements were found to be most pronounced in late summer and fall and seemed to be associated with the end of the denning period when young foxes of the year were able to care for themselves. These extensive movements by foxes explained why the original trapping zone of 5 to 10 miles wide had not stopped the spread of rabies in wild foxes. This is particularly clear when it is considered that the incubation period for rabies in foxes probably averages between 4 and 8 weeks, during which period they act normally in all respects. Our trapped zones, therefore, had to be wide enough to absorb a roaming fox during

the incubation period of rabies in order to minimize the chance of its passing through the zone before the final infectious stage was reached. The fox populations in the zone had to be reduced to a level low enough to make it unlikely that a fox in the infectious stage (a period of less than a week) would encounter and transmit rabies to a healthy fox.

This type of control measure is designed only to prevent rabies from spreading outward from an infected area. Within the area itself, individual counties, in accordance with Section 169 of the Conservation Law, may obtain State aid assistance up to 50 per cent of the program cost in carrying out fox trapping to lessen the severity of the disease epidemic. But the reimbursement to any one county cannot exceed $6,000 per year, and county programs must operate in accordance with approved plans for controlling foxes.

Although our present zone trapping system appears to be effective in preventing the further spread of rabies, it has not been successful in eradicating the disease from our wildlife populations. At one time it was believed that if the spread of rabies to new areas could be arrested, rabies itself would kill enough foxes in the epidemic area to cause the disease to disappear. It is now obvious that this is not the case, as evidenced by the occurrence in numerous counties of a relatively high incidence of fox rabies for periods of nine to ten years.

There are many unanswered questions concerned with rabies in wildlife which need further study to more intelligently plan future control programs. One such question concerns the reason for rabies persisting for years in wild fox populations in some areas, while in other areas of equally high fox population the disease disappears of its own accord after a few months. As an example of this we find that there was an outbreak of rabies in foxes in Chautauqua County in 1944 which soon disappeared. Similar outbreaks have occurred in other western New York counties without becoming epidemic as is typical in central New York.

Another question which has been raised on numerous occasions is the role played by other wildlife species in providing a reservoir of reinfection. It often appears that rabies remains quiescent in foxes for periods of six or eight months in certain areas and then flares up again with renewed vigor. It may be possible that the virus smoulders unnoticed in some small animals such as weasels, rodents or bats and is then reintroduced into foxes. Rabies has been found in bats in Florida and in western Pennsylvania, and because of the migratory habits of certain bats it is entirely possible that they may be involved in New York, although no positive case have been found to the present date.

There is also evidence which suggests that there may be more than one type of rabies virus to be dealt with. Rabies in wildlife is a fairly widespread problem in the United States. The fox is the most common wildlife carrier in the Northeast and parts of the South. But in Florida the raccoon is the species most frequently found with rabies, while in North Dakota and in certain other midwest states the skunk is the animal which exhibits rabies in epidemic proportions. Foxes are numerous in both Florida and North Dakota, but very rarely are found to be rabid. As an experiment, a North Dakota research worker injected a captive fox with brain tissue from a skunk which died of rabies. After several weeks the fox died but did not exhibit typical symptoms of rabies. An examination of the fox's brain failed to show any Negri bodies which are typically associated with rabies in all animals. However, when brain tissue from this fox was injected in a healthy skunk, the skunk developed typical rabies symptoms and Negri bodies were found in its brain. This one instance does not give sufficient evidence to draw any conclusions, but it does point out another of the many aspects of this problem where additional research is needed.

One thing, however, is obvious: The removal of foxes over a large area of the State by trapping in an effort to eradicate rabies is not a practical means of control.

The Conservation Department has therefore been studying other methods of fox population control which may be less expensive and more efficient than trapping. The one method which appears to hold some promise is the use of poison. Research is currently being conducted for the purpose of developing techniques for the use of poison which will be particularly effective for killing foxes *without endangering humans, domestic animals or other wildlife species.* Until such a method can be developed and put to use, the people within a large segment of our State will probably continue to be harrassed by this dangerous disease.

—RALPH COLSON,
Game Research Investigator

Department of Agriculture and Markets:

THE serious outbreak of rabies in south-central New York in 1945 and 1946 and the persistence of the disease in dogs, foxes and other forms of wildlife resulted in heavy livestock losses. Reflecting the demand by livestock owners for indemnity payments, the New York State Legislature, in 1947, passed a law authorizing such payments by counties involved and appropriating funds to reimburse the counties for one-half the amount paid in indemnities. The law (Agriculture and Markets, Article 6-A, Section 105) provides: "Each county shall be liable for damages resulting within the county to domestic animals from the disease known as rabies and indemnification therefore shall be made in the manner provided by this article." The maximum payments allowed: Cattle and horses, $250; purebred registered cattle, $350; swine, goats or sheep, $75. Up to this year claims have been made on 1,833 animals in the amount of $300.115. Most of the claims were for cattle. In the year 1953, the indemnities totaled $50,670 and covered 220 animals.

What to do

The first step to take when animals do not appear normal (or show any signs of sickness) is to call your local Veterinarian. He is trained to differentiate between rabies and other diseases that may have similar symptoms. The Veterinarian knows that animals with rabies can be dangerous and will advise the owner about precautionary measures to be taken. If an animal does have rabies the saliva probably contains the virus, and one should be careful not to get the saliva in the eye or on the broken skin. The Veterinarian will also inform the owner of the procedure to follow to secure indemnity in the event the laboratory report is positive.

The law specifies that when an animal is lost from rabies, the owner's next step is to notify immediately the Assessor in the town in which the death occurred so that the animal can be appraised. The Assessor, having satisfied himself that the animal had rabies, makes his report to that effect, together with his appraisal of the animal's value. This report is filed with the County Treasurer and a copy left with the owner. The animal's head, or a portion of the brain is then removed, preferably by a Veterinarian because of the health hazard involved. This material can either be taken to the laboratory immediately, or shipped to the laboratory in ice.

Laboratories approved for rabies exami-

nation are as follows: (1.) Division of Laboratories, New York State Department of Health, New Scotland Ave., Albany, N.Y. (2.) New York State Veterinary College, Diagnostic Laboratory, Ithaca, N.Y. (3.) Erie County Department of Health, 601 City Hall, Buffalo 2, N.Y. (4.) Nassau County Laboratory, 318 Fulton Ave., Hempstead, N.Y.

When the claimant receives a laboratory report it is given to the Assessor and made part of his report of appraisal. In most cases the County Treasurer will approve the claim and payment by the county follows. But if the claimant or County Treasurer is dissatisfied with the appraisal either party may ask, in writing, for a review by the Commissioner of the Department of Agriculture and Markets.

Vaccines offer protection

The vaccination program has been most successful in controlling the disease in dogs, and has been tried to a limited extent in cattle. Some livestock owners have vaccinated their cattle in the known rabies areas with a killed vaccine but the cost of buying the product and administering it is expensive and the immunity produced has, in some instances, been questionable. As a consequence, vaccinating cattle and other domestic animals against rabies has not proved too popular. Recently, however, the situation has changed due to the availability of a new modified virus vaccine. This vaccine is similar in many respects to the modified live virus vaccine used for dogs, but has been further reduced in potency. This new vaccine has been used on thousands of cattle in Central America and more recently in controlled experiments on cattle in Georgia and in two different areas in New York State.

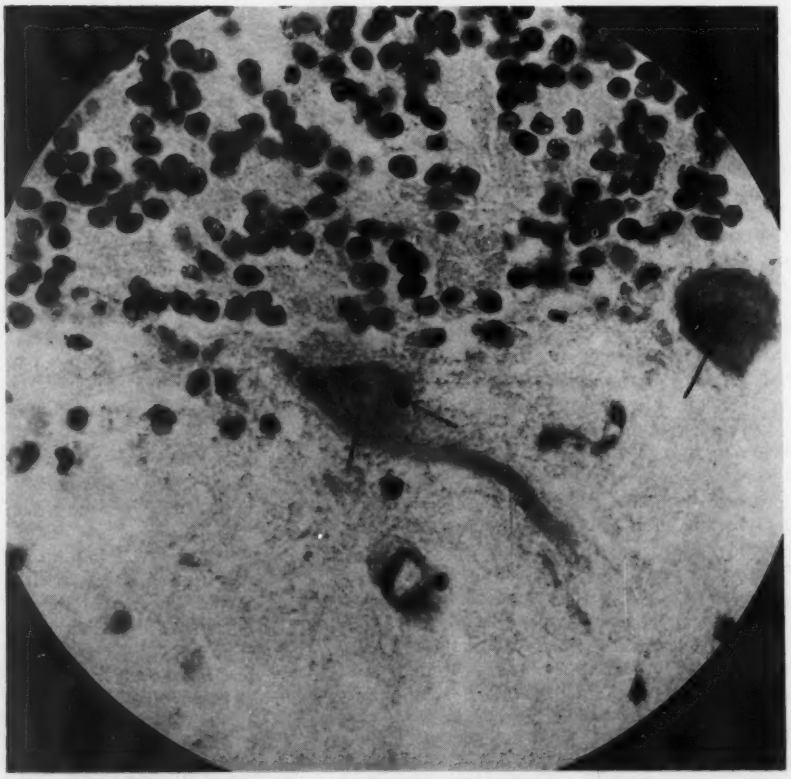
Thus, owners of purebred cattle wishing to preserve blood lines and protect their animals against rabies have a biological product which can be used with safety. Only time will tell, however, how long the immunity produced may last.

—Dr. W. S. Stone,
Assistant Director

Department of Health:

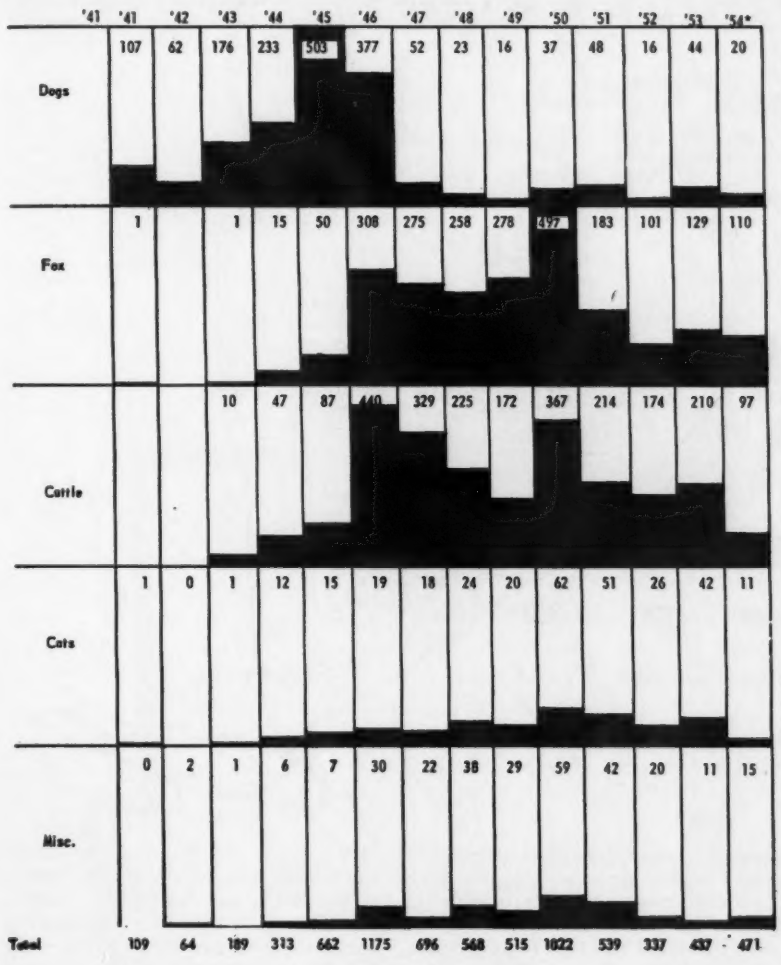
RECORDS indicate that rabies has existed in this State at least since the Colonial era. Prior to the 1940's the dog was the principal species involved; only rarely were other animals reported as rabid, and then presumably following exposure to infected canines. During the past decade, however, the situation has changed significantly. Rabies has become widely and firmly established in wildlife, principally foxes, in twenty to twenty-five counties in the east-central and south-central portions of the State.

What legal procedures are followed when rabies has been reported in a given county? First, the county is customarily "certified" for the presence of rabies by the Commissioner of Health and all dogs placed under quarantine until certification is removed or until the county is declared a "designated" area. A county may



Photomicrograph of brain tissue from rabid animal. Arrows indicate viral inclusion (Negri) bodies (positive indication) in large cells.

Confirmed Cases of Rabies in State (Exclusive of N. Y. City)—1941-54



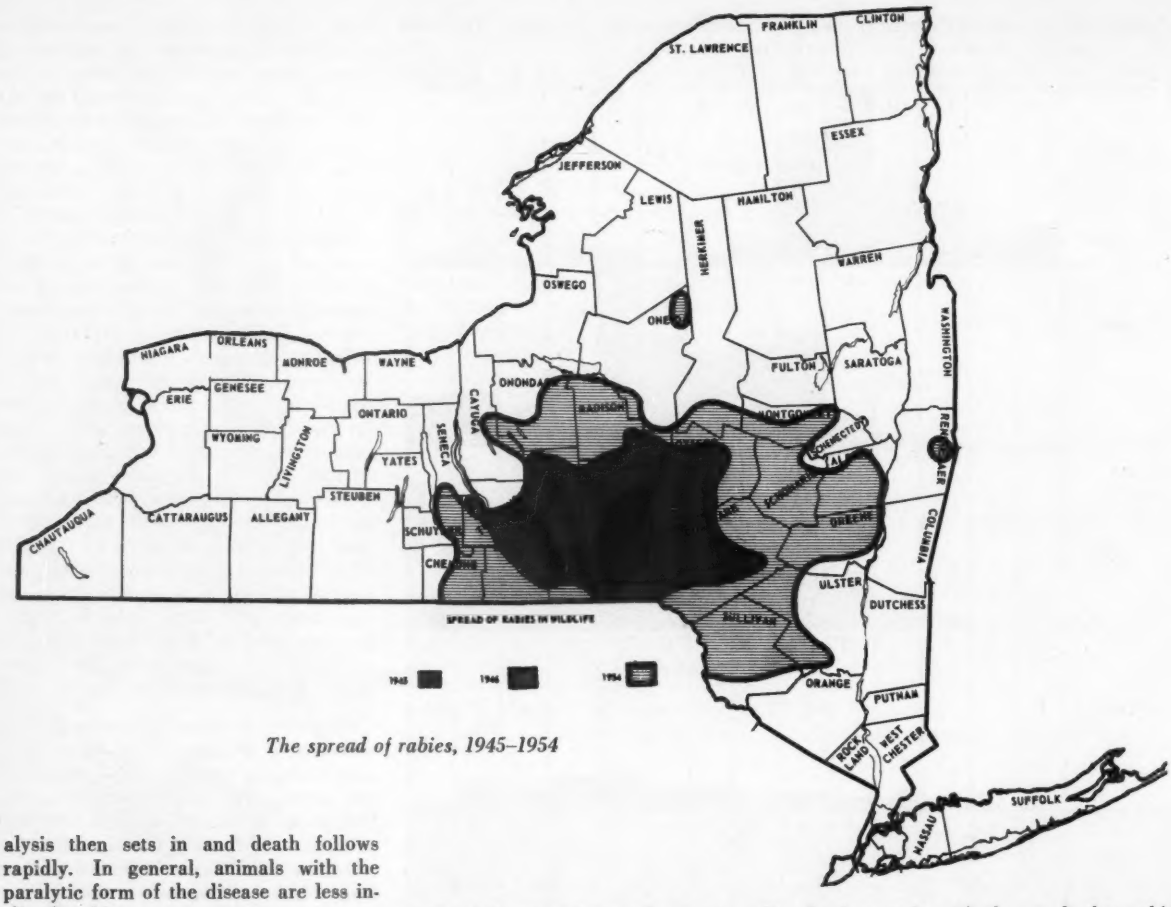
Note control of canine rabies since initiation of vaccination in 1946

qualify for "designated" status whenever (a) 70 per cent of the canine population has been vaccinated against rabies, or (b) if the Board of Supervisors of said county has appropriated money for conducting an adequate canine vaccination program. If the latter is the case, at least 70 per cent of the dogs must be vaccinated within four months or "designation" may be withdrawn. Vaccinated dogs are allowed to run at large 30 days following vaccination in all designated areas. Non-vaccinated dogs, on the other hand, are never legally permitted to be at large in counties certified for the presence of rabies. Certification of a county for rabies may be removed *six* months following the last reported case if only canine rabies exists; and *twelve* months if wildlife rabies is present, since the disease in wild animals is poorly reported and has been known to slumber for months without detection. Fifty per cent State aid is available to all counties underwriting canine vaccination programs.

Throughout the years rabies outbreaks have been accompanied by considerable concern, even hysteria, on the part of those residing in infected areas. Such concern is understandable since once signs of rabies develop in an individual, that individual (including man) almost invariably dies. The disease may be prevented but not cured. Such fear, however, stems in part from a lack of knowledge of the disease, for there is much a conscientious community can do to eliminate or minimize the rabies problem. Co-operation with the Conservation Department in combating wildlife rabies, and the vaccination of dogs, for example, are most important.

The dog, with which man is most intimately associated, poses the greatest threat to our families in uncontrolled rabies outbreaks. Despite widespread and persistent infection in wildlife, experience in this State and elsewhere has conclusively demonstrated that canine rabies can be controlled (Fig. 1), or eliminated through the medium of vaccination and stringent dog control. Two effective vaccines have been developed for use in dogs. One of these employs killed rabies virus produced in the central nervous system of mammals. It will protect the dog for at least one year. The other contains living rabies virus grown in embryonated hen eggs and so modified that it will no longer produce disease in the dog, but rather will protect the dog against rabies for at least four years. This latter product can be compared to the smallpox and yellow fever modified live virus vaccines so commonly used in man. The "chick embryo vaccine" as it is sometimes called, has been extensively used in all countywide vaccination programs since 1952 with almost incredibly good results. Of the more than 250,000 dogs vaccinated to date, only two animals later developed rabies—as compared to 76 known cases of the disease in non-vaccinated dogs during the same period. There has been only one canine death attributed to the vaccine.

Whenever it occurs, the disease in dogs customarily develops 10 to 60 or more days following exposure. Incubation periods beyond three months are infrequent. Two forms of rabies have been described in dogs—the furious and the dumb or paralytic type. It should be emphasized, however, that a diagnosis of rabies is not always possible on the basis of clinical signs alone. Laboratory confirmation is most important, either through isolating the rabies virus or by demonstrating its presence by finding viral inclusion bodies, (called Negri bodies), in the nerve cells of the central nervous system. Typical Negri bodies have never been observed in diseases other than rabies. The clinical picture varies widely, depending upon the virulence and amount of virus present in the central nervous system of the animal and the susceptibility of the host. In most cases, a change in behavior is the first apparent sign, the animal becoming either depressed or more affectionate. Hyperexcitability is common, with a tendency for the dog to roam widely, biting any object or animal with which it may come into contact. As the disease progresses paralysis of the throat muscles usually develops with resultant drooling or frothing at the mouth. Champing of the jaws occurs in the futile attempt to swallow saliva. A change in voice is frequent, with general paralysis and death following within a few days. In some dogs hyperexcitement may be lacking, with the animal inclined to seek seclusion. Paralysis, particularly of the lower jaw and of the extremities, develops early. General par-



The spread of rabies, 1945–1954

alysis then sets in and death follows rapidly. In general, animals with the paralytic form of the disease are less inclined to bite.

Dogs or other animals known to have bitten humans should be held in isolation until death occurs. This is advisable since the diagnostically significant Negri bodies are most plentiful late in the disease, thus permitting the quickest reliable diagnosis of rabies. Animals should never be destroyed by shooting through the head, since this would interfere with the proper examination of the brain. Where humans have not been exposed it is less important that the animal die a natural death since an accurate diagnosis, 'though more expensive and time consuming, may be made by laboratory techniques.

Rabies virus is transmitted through the medium of infected saliva and is rarely present for more than a few days before onset of illness. If you are bitten by a dog, and the dog exhibits no signs of rabies within seven days thereafter, it is believed that there is no danger of your having been exposed to the disease. It is essential, however, to report all bites by rabid or suspected rabid animals to your health officer. He is competently trained to handle such cases.

Individuals bitten or exposed to known or suspected rabid animals should quickly seek medical advice. The treatment of humans frequently poses a dilemma for the physician who must carefully weigh the danger of contracting the disease, against the known but frequently over-emphasized hazards of specific post-exposure rabies treatment. Immediate and thorough local treatment of the bite wound is of paramount importance. If delay is unavoidable, emergency first aid in the form of thorough washing and irrigation of the wound with soap or soap solution should be undertaken. All physicians in the areas of this State where rabies exists are well informed concerning the indications for specific post-exposure rabies treatment, including local treatment of wounds and the use of antiserum and vaccine. Treatment will be furnished free of charge to those who cannot afford payment. *Remember—rabies can be prevented but not cured!*

Recent recognition that bats may play a role in disseminating rabies is intriguing. Although rabies has long existed in the vampire and fruit-eating bats of Central and South America, the disease had not been recognized in bats in this country prior to 1953, when rabid bats in Florida and Pennsylvania made unprovoked attacks on humans. Recognition that infected bats exist in this country prompted further study with the result that rabies has already been reported in five species of free living and colonial type insectivorous bats and has also been recognized in Texas, Colorado and Montana. Bat rabies is believed to be much more widespread than presently reported. The disease in bats is unique in that excretion of the virus in the saliva may persist for long periods of time—weeks or even months—before death occurs. And bats frequently survive rabies infection.

To date rabies has not been observed in the bat populations of this State and unprovoked attacks such as those occurring in Florida and Pennsylvania have not been reported. Certain species of bats found in this State, however, are known to migrate as far south as the Carolinas, so that bat rabies could occur here if indeed it does not already exist. It is not believed, however, that bat rabies will prove to be a major public health problem. But the role and importance of the bat in the establishment of heretofore unexplained areas of wildlife infection affords room for speculation, research and further study.

—Donald J. Dean, D.V.M., M.S.,
Veterinary Consultant

Tioga County

N.Y.S. Conservation Department Offices

District Forester	21 Clinton Ave., Cortland
(Sub-office)	245 Broad St., Waverly
District Game Manager	Corners Community Center, Hanshaw Road, Ithaca
District Fisheries Office	21 Lackawanna Ave., Norwich
District Game Protector	1201 Press Bldg., Binghamton

Farm Service Offices

County Agricultural Agent	209 Front St., Owego
Soil Conservation District	190 Front St., Owego

—Roy Irving

The Deer Case

On South Clove Mountain

3 P.M. February 1, 1955, Game Protector Walter Roeper, Special Game Protector Clarence Scutt and myself, Game Protector James Schulhoff, were checking a trapping complaint in the vicinity of Ketcham Swamp, Town of Beekman, Dutchess County, when we heard five or six shots north of us in the vicinity of South Clove Mountain.

S.G.P. Scutt in his auto took one road, and G.P. Roeper and myself took another road. When we met S.G.P. Scutt again he told us that he had heard five more shots, but this time he had been close enough to pin-point the location of the shots. We proceeded to an abandoned wood road where we found a parked auto and tracks in the snow of two men leading into the woods. We left S.G.P. Scutt at the auto in the event the two men should return before G.P. Roeper and I could catch up with them. We followed their tracks. After about ¼ mile the two men parted, so we did likewise. I followed tracks for about a mile or so which led to a high ridge overlooking an open piece of woods. From this point I could see the inwards of a deer, and on the snow leading from this I could see where a deer had been dragged about 100 yards; then I saw the carcasses of two deer.

I was sure I had been observed, and that the dead deer had been abandoned, but when I reached the deer I could see that two more deer had been dragged around the ridge and in the general direction of the parked auto. I followed this trail for about ½ mile when I saw two men standing under a pine tree. As I walked up to the two men I recognized one as being Charles Hoag; the other said his name was Stephen Hample. Hoag had a .270 and Hample had a .35 Remington, and both rifles were equipped with telescope sights. About 50 feet up the trail I found the two deer.

Both men were then placed under arrest. We started back to the parked auto, where I met G.P. Roeper and S.G.P. Scutt. Roeper said he had seen the two men dragging the deer. We then proceeded to Dover Plains to present the case before Justice of the Peace William Kelley. The two men were released on a property bond fixed at $1,000 each. Both agreed to reappear and settle by civil compromise.

Special Game Protector Jacoby was then notified. He rounded up a crew of men and with the aid of lights, we returned to South Clove Mountain to pick up the deer. Upon examining the two does' internal organs, we found one of them was carrying twins (one buck and one doe), the other a single fawn; the organs of the third doe were not recovered. The examination of the buck deer showed him to have less than ½ inch antlers.

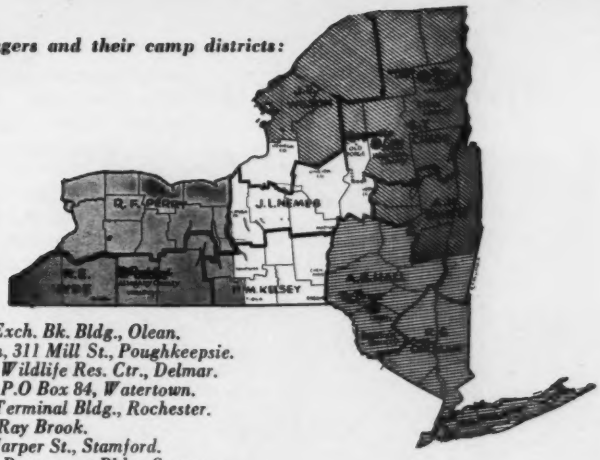
February 8, 1955, Charles Hoag (29, Poughquag, New York) and Stephen Hample (43, of Wingdale) settled by civil compromise for a violation of Sec. 170 of taking four wild deer during the close season for same, to wit: 3 does and 1 buck. They paid a penalty of $802.50 each. They also pleaded guilty in a criminal action to a violation of Sec. 180, engaging in hunting quadrupeds without first having a license so to do, and for this were fined $10 each, judgment suspended. In addition Commissioner Wehle has denied them the right to secure a license for the next five years.

—JAMES SCHULHOFF, *Game Protector*

Our Camp

p Program

Game managers and their camp districts:



R. E. Hyde, Exch. Bk. Bldg., Olean.
R. G. Ohlman, 311 Mill St., Poughkeepsie.
A. H. Smith, Wildlife Res. Ctr., Delmar.
J. E. Wilson, P.O Box 84, Watertown.
R. F. Perry, Terminal Bldg., Rochester.
G. T. Chase, Ray Brook.
A. G. Hall, Harper St., Stamford.
J. L. Nemes, Paramount Bldg., Syracuse.
P. M. Kelsey, Corners Community Ctr., Ithaca.

EVERY Summer, the Conservation Department undertakes one of its more important civic functions—that of teaching some of the youngsters of our State the fundamentals of conservation. This is done at our four Boys' Conservation Education Camps, located at Ray Brook, Rushford, Raquette Lake and DeBruce (see map). This year the camps open July 3 and close August 27, and will handle a total of about 1,600 boys.

At these Conservation Education Camps, boys between the ages of 13 and 17 spend a week going to an outdoor school and receive simple explanations of why our natural resources should be handled carefully. Soil, water, forest and wildlife conservation are taken up through lectures, movies, slides and practical demonstration. The most important part takes place after each subject is explained; the boys put into practice what they learn. This is the *learning by doing* part. They actually put in stream improvement devices; they do forest thinning and woodlot management; they see some of the soil and water conservation practices working on the land.

Along with this, Conservation Law fundamentals are explained and the boys learn some of the factors that must be known before the Conservation Department can set wise season and bag limits for fish and game. They learn that wildlife must be harvested just like any other farm crop. Lessons in outdoor camping, first aid, canoe safety, axe handling, map and compass work, fly tying, fly and bait casting are thrown in for good measure. To make the subject matter more interesting and to insure that the hunters of tomorrow will be safer hunters, the boys are taught how to handle firearms safely, and many take their N.R.A. Hunter Safety tests which qualify them for licenses if they are old enough. (They shoot these shotguns and rifles too.) And if the boys think this is too much work and not enough play, they can play softball, badminton, horseshoes and shoot the bow. Or they can go trout fishing in the nearby streams.

Each boy spends one week at the camp—at a cost of $25 to *any* sponsoring civic organization (Kiwanis, Lions, Garden Club, School, Exchange, Rotary, Elks, Odd Fellows, etc.). Boys cannot be sent to a specific choice of camps, but must attend the camp which serves their region (see map). All inquiries should be made to the Game Manager serving your regional area. His name and address is noted below the map.

THIS pioneering conservation education camp program for boys has been in operation in New York since 1947. The primary purpose is, of course, to teach conservation where it can best be taught — outdoors — to as many of the coming generation as facilities at the four camps permit. It is sort of a stop-gap program, pending the day when it may be possible for all young people, at one time or another, to learn at least the fundamentals of conservation in school. But until that day comes, the Conservation Department at these camps is constantly testing ways and means of getting boys to understand not only how to use natural resources wisely, but also why such proper use is so immediately necessary.

When we can be sure that the camp graduates are enthusiastic graduates, then we'll feel that the teaching techniques and the type of program provided are sufficiently adequate to pass along to any agency which may be better equipped to do a bigger job of teaching conservation than this Department.

To be sure, we're merely scratching the surface (1,600 boys per year). But we hope, eventually, to make a master record copy which anybody can play.

—NICK DRAHOS

Sportsmen's Conservation Workshop

Contour farming and strip cropping on the Chauncey Stillman Farm, Amenia, Dutchess County

AS the sun arose on June 25, 1954, so did 30 sleepy delegates to the Sportsmen's Conservation Workshop, encamped on the Boy Scout tentground near Salt Point in Dutchess County, and at 7:30 A. M. the two and one-half day session began.

This workshop is put on by the New York State Conservation Council and the Department of Conservation of Cornell University, with the generous co-operation of the New York State Conservation Department. The 1954 workshop was directed by Professors Ollie Hewitt and Larry Hamilton. The group saw, felt, smelled, heard about and discussed some of the important soil, water, forest and wildlife problems in the Lower Hudson Valley.

The first day was devoted to a tour and study of some of the large reservoirs supplying water to New York City. Majordomo Cecil E. Heacox, Senior Aquatic Biologist in the State Conservation Department, herded the car caravan from Ashokan to Rondout to Neversink, by devious back roads, and led the discussion on fisheries research and management in the streams and reservoirs of the vast water supply system.

The evening program consisted of a panel discussion of "public hunting and fishing opportunities and problems in a metropolitan area." Robert Scott of the Dutchess County Fish and Game Club, a local farmer representing the landowners; Robert Ohlman, District Game Manager, and Cecil Heacox stirred the pot as panel members, under the watchful eyes of chief cook and moderator Herman Forster, a director of the New York State Conservation Council.

The highlight of the field trip on the following day was a visit to Chauncey Stillman's Wethersfield Farm near Amenia (CONSERVATIONIST, June-July, 1953). Farm Manager Owen Boyd conducted the group around the 783 acre "hill farm." In 1940 this farm was like many others in the area—poor pasturage, poor woodlands, short of water and cropland cut up into eleven small fields. The farm at that time carried 13 Angus brood cows, two bulls, 27 heifers and calves, three milk cows and 45 sheep. Under Boyd's management—and with the advice and assistance of the County Agent, the Soil Conservation Service and the New York State Conservation Department—things have changed drastically. The farm now supports about 110 dairy cattle, 40 pure bred Hampshire hogs, chickens, turkeys, swans and an increased wildlife population which includes mallards, Canada geese, hare, deer, several kinds of fish, and sundry small birds and mammals. The delegates to the workshop saw the conservation practices which have made the difference. John Porter of S.C.S. and Professor Harry Kerr of Cornell showed them the three large contour strip-cropped fields, part of the 3,000 feet of diversion ditching and the 170 acres of improved birdsfoot trefoil pasture. As the group inspected the beautiful and effective contour wildlife hedges, Professors Harlan Brumsted and Ollie Hewitt told of the latest research work with the various shrubs, and of the management practices necessary to produce a good hedge. In the woods, District Forester Earl Brockway and Professor Larry Hamilton showed the group part of the 140 acres of reforestation and 200 acres of natural woods receiving management under the Forest Practice Act. After a picnic lunch a few of the eight farm ponds (covering 55 acres) were inspected, with discussion of pond management led by Professor Harlan Brumsted and John Gould, Aquatic Biologist of the State Conservation Department. The watershed runoff studies which had been set up on the farm by the S.C.S. were explained and shown by Harold Hobbs of the Agricultural Research Surveys, U. S. Department of Agriculture.

The day's field trip was rounded off by brief visits to another farm, to a pond where John Gould had some experimental aquatic weed control work in progress, and to a large wildlife marsh where District Game Manager Robert G. Ohlman mounted the soap box. Then, back at camp, the happy band was exposed to some of the facts and figures on plantation management as practiced in the Boy Scout Plantation under the guiding hand of District Forester E. D. Brockway.

The condemned men ate hearty meals, rolled up their sleeves and dug into a discussion of the role of vegetation in watershed management. Gordon Ayer, Engineer of the U. S. Geological Survey, and Dr. Harold Wilm, Associate Dean of the College of Forestry, State University of New York, capably presented the subject from two aspects, and provided the food for thought which resulted in stimulating argument and discussion long after the less hardy souls were safely tucked in bed.

On Sunday morning, June 27, the workshop wound up with visits to the Sandanona pheasant shooting preserve, to the Wollerton farm where a wood chipping machine and the use of wood chips in farming and forestry were demonstrated, and to another wildlife marsh. Breathing time at last, as the delegates drove back home, some driving clear across state to the Buffalo area. With each of them rested the responsibility to carry some of the experiences and knowledge gained to their local fish and game organization.

WE have described this outing in some detail so as to give you an idea of the great variety of subjects covered in these conservation workshops. Previous workshops have been held at Speculator (southern Adirondacks), Rushford (Western N. Y.) and Ithaca (Southern Tier). It is planned to hold the 1955 Sportsmen's Conservation Workshop again back at base—Cornell's Arnot Forest near Ithaca. This area is rich in facilities for teaching conservation and for observing the results of research work with our renewable resources. The emphasis at this 1955 session will be fish, fishing and fisheries research. Craft are being lined up so that the group can spend part of a day on beautiful Cayuga Lake, becoming familiar with the fish resource and fisheries investigations in this Finger Lake. One of the Arnot ponds has been stocked with several kinds of trout so that comparisons in survival, growth and angling resistance may be made, and delegates are invited to bring their angling gear. Other aspects of fish management will be on the program, and of course the fish will be augmented by other "F's"—fun, furs, feathers, forestry and farming. Dates (and further details) will be sent to your local club on request.

Hope to see you there.

—LAWRENCE S. HAMILTON,
Cornell University

The Hart's Tongue Fern

by Dr. Mildred E. Faust,
Dept. of Plant Sciences, Syracuse University

NEW YORK State is noted for its many beautiful ferns, but probably none has interested more people than the rare Hart's tongue fern of central New York. Not only its rareness, but the unique strap-shaped evergreen leaf accounts for this interest. (It is occasionally confused with its near relative, the walking fern, and also with the plantain-leaved sedge.) The common name was used because the leaf has the shape of a hart's tongue, and the scientific name (*Phyllitis scolopendrium* variety *americana*) is also descriptive; *Phyllitis* means "leaf" or "fern," and *scolopendrium* means "centipede"—having reference to the spore bearing parts ("sori") on the underside of the leaf which resemble the feet of a centipede; the coiled tips ("fiddle heads") of the unrolling leaves add to this illusion.

The Hart's tongue fern is abundant in parts of Europe and Asia but is found in only a few places in North America: One small locality in Tennessee, several in southeastern Ontario, one in the Upper Peninsula of Michigan, and five areas in Onondaga and Madison counties of New York. Its original discovery in North America was near Syracuse, on July 20, 1807, by a young European botanist named Frederick Pursh. Since then four other areas have been found along a 35-mile line eastward from this location.

The Hart's tongue grows in canyons and ravines where Onondaga limestone is often a dominant feature and, with few exceptions, is found on shady, talus slopes facing the northeast, where the soil is cool and moist. The spores germinate under loose rocks in a shallow black humus. One small area contained approximately 3,000 plants when it was first discovered, but due to collecting and clearing this number gradually decreased and in the 1920's, when efforts to make this area a State Park were unsuccessful, and the plants seemed destined to be destroyed, many hundreds were transplanted to an existing State Park where they have continued to grow and increase. In 1930, due mainly to the efforts of the Syracuse Botanical Club, an amendment to the State Conservation Law was passed by the State Legislature placing the fern on the protected list, and making it unlawful to collect it in Onondaga and Madison counties. Due largely to its protection, the fern has been maintaining its growth and in recent years is increasing in numbers. Plants grow easily from spores and become mature in two years. Many have been planted in gardens and in suitable areas throughout the eastern part of North America. Fortunately a record of many of these new "stations" has been kept by the American Fern Society, so they will not be confused with the original ones.

The accompanying pictures show the fern growing in favorable areas where the leaves may attain a length of 26 inches and a width of over two inches. In such areas, a single plant may have as many as 126 leaves. However, where the woods have been cut or cleared and the ground has become warmer and drier, not only are the number of plants reduced but the leaves are much smaller—and there may be only a few on a single plant.

Hart's tongue is one of our rarest ferns. Good conservation must preserve it.

Spotlight on New York's Deer Herd

NEW YORK'S claim as a ranking big game hunting state depends squarely on its white-tailed deer population. The black bear get into the act too, but although they appear to be prospering, theirs is only a "walk-on" role. The deer have the spotlight and they have used it in recent years to stir up all manner of controversy. In extensive areas of the Adirondacks they have overbrowsed their range and starved in considerable numbers when faced, periodically, with a severe Winter. In the Catskills overbrowsing has been less extensive but still they die in a bad Winter, and on the fringe area, get into trouble with farmers by browsing apple trees, eating cauliflower and other crops. And in the central and western counties, where there's little or no starvation, the deer herd has responded—to the farmers' dismay.

Meanwhile, foresters point to excessive deer populations as a hazard to natural forest reproduction and normal succession. And sportsmen debate earlier seasons, later seasons, longer seasons, one-deer seasons, anterless seasons and combinations of all types.

The deer—they just go right along in the spotlight, determined it appears to show that New York, home of the most humans, can also have the most deer.

Right in the middle of this "mad-hatter" play are the Conservation Department's game research and game management men. It's their problem, in the first instance to determine the population level of the species in the county groups comprising the major hunting zones of the State; find out the sex ratio and age composition of these herds; figure the reproductive potential in terms of climate and range qualifications. All this sounds tough enough, but it's child's play to the next step: Proper management.

The objective is clear enough: Give sportsmen the opportunity to harvest enough deer so that, in the Adirondacks and Catskills, the herd won't eat *itself* out of house and home; and in the central and western counties, so they won't eat the *farmer* out of house and home.

First 'though, to gain acceptance of their ideas, game biologists must overcome prejudice built up through the years for buck-only seasons; convince hunters that does are deer too, that the herd will be healthier, bigger, better when the harvest is based on good animal husbandry practices instead of sentiment. This battle seems nearly won; since 1950 sportsmen in New York have harvested approximately 42,000 anterless deer, while during this same period the buck kill has risen from 26,411 to 36,553. The sportsmen themselves have proved the point by demonstrating through their own kill records that New York's deer herd can sustain controlled anterless seasons with hardly a let-up toward progressively higher population levels.

But that's only part of the problem. Securing the proper harvest of deer in the Adirondacks reduces itself to a three-way tussle between man, geography and weather. Deer are not uniformly overabundant in the Northern Zone. It's true that concentrations are too dense over extensive areas of Adirondack range but these concentrations, for the most part, are deep in the interior regions; difficult for hunters to get into and even more difficult when it comes to lugging deer out. The weather, too, is unpredictable, with heavy, early snows no rarity. So in the Adirondacks there is the problem of getting deer and hunters together. The experimental "two-deer" season on wilderness tracts, held this past Fall, was one try toward a solution. It didn't work perfectly, but it did work well enough to encourage further thought along that line. (See February-March issue of this magazine.)

In the Catskills and through the central and western counties the problem of adequate harvest takes a new turn. Here there are few geographically inaccessible areas. Weather is seldom a limiting factor, and there are plenty of hunters. There's the rub! Not too many hunters in terms of the available crop of deer, but from the landowners' point of view, too many hunters with too few scruples concerning the property rights of the farmers. So we find inaccessibility of another kind—increased posting of private lands. This promotes further increase in deer herd populations and further aggravates an already serious crop damage situation about which farmers complain as bitterly as they do against property damage by hooligan hunters.

Once again the biologists and game managers of the Conservation Department find themselves caught in the middle. Greater hunting opportunity must be provided to assure proper biological balance of the deer herd. At the same time, adequate harvest of deer is essential to holding crop damage within tolerable limits. And yet some means must be found to assure the desired deer harvest without subjecting the landowner to property damage, insults or fear for life and limb.

ONE thing for sure: The white-tailed deer is a dynamic species. It holds the big game spotlight in New York and it seems certain to continue to hold the focus of attention for biologists, sportsmen and farmers. It deserves application of all the intelligence and carefully reasoned co-operation of all interested parties—and these are many.

—A. W. BROMLEY

PONDS (2)—

Where to obtain assistance with their development

THIS is a follow-up on our article "Ponds (1)—Where to Build Them" which appeared in the February-March, 1955 issue of THE CONSERVATIONIST. With the hope that by this time you have discovered a likely location for a pond, we now offer some information as to where you can obtain assistance with its development through co-operating public agencies.

As with most other enterprises, there is a right way and a wrong way to go about developing a pond. Any pond site worthy of development and the expenditure of your money should be surveyed, designed and staked out before any construction work begins. This is the right way, and the best way to accomplish it is to get someone who really knows the pond construction business. It may come as a pleasant surprise that quite a bit of assistance is available from public agencies which are more than willing not only to help with a pond development, but with many other conservation practices. In New York State these public agencies are: 1. Soil Conservation Districts; 2. State Extension Service; 3. New York State Conservation Department.

Names, addresses and telephone numbers of the local representatives of all these agencies, together with charts showing the areas they serve, appear in the Farm Service Telephone Directory published by the New York Telephone Company. (In addition, there is a wealth of other information for country dwellers contained in this directory, and we suggest you get a copy. It is available free of charge to subscribers to its services by contacting your local New York Telephone Company business office. This is the publication referred to in the Back-of-the-Book section, page 29, of our February-March, 1955 issue.) After reading this article and consulting the Farm Service Telephone Directory you should be able to put your finger on the individual who is in the best position to help you.

Soil Conservation Districts

Probably your best source of help is your local Soil Conservation District—an organization set up on a county basis and administered by a Board of Directors whose members are residents of the county. The U. S. Soil Conservation Service provides an office, vehicles, equipment and a small staff of technicians to assist each District when officially asked to do so by its Board of Directors.

Of the 62 counties in New York State, 42 are presently organized as Soil Conservation Districts and farm ponds are one of their specialties. These counties are:

Albany	*Fulton*	*Otsego*
Allegany	*Genesee*	*Rensselaer*
Broome	*Herkimer*	*Saratoga*
Cattaraugus	*Lewis*	*Schenectady*
Cayuga	*Livingston*	*Schoharie*
Chautauqua	*Madison*	*Schuyler*
Chenango	*Monroe*	*Seneca*
Clinton	*Montgomery*	*Steuben*
Columbia	*Niagara*	*Tioga*
Cortland	*Oneida*	*Tompkins*
Delaware	*Onondaga*	*Washington*
Dutchess	*Ontario*	*Wayne*
Erie	*Orleans*	*Wyoming*
Franklin	*Oswego*	*Yates*

If your property is not located within one of these counties you will have to look elsewhere for assistance. But if you find you are in a District and need help in developing your farm pond, here's what you do:

Contact the Soil Conservation District office in your county and ask to have their conservation program explained to you. The District will be interested not only in your pond problem but also in an over-all conservation plan for your property. You may be asked to submit a written application if you decide to become a co-operator with the District, and when your application is acknowledged you will be asked to sign a conservation agreement with the District Directors. After this paper work has been done, the District will arrange

to have a conservation technician visit your place. He will help you make a conservation plan for the whole property —which may include a pond if a suitable site can be found. Anyway, all recommendations will be based on sound conservation practices, nothing will be compulsory, and all technical services provided are for free. How can you lose?

Once you have become a *bona fide* cooperator, things can begin to happen. If a pond is your immediate objective (and if the technician agrees that you have a suitable location for one) he will proceed to carry the ball. The pond site will be surveyed and soils examined (you may be asked to act as rodman for the surveyor, and to dig a few test holes in the process), a design will be made, and a cost estimate presented to you. When the pond plan has been checked—and Soil Conservation engineers are sticklers—the pond will be scheduled for construction.

The District will arrange for the necessary pipe and earth moving equipment (usually a bulldozer) or you can make your own arrangements. These you pay for in advance, based on the cost estimate if the District makes the arrangements. You will also be expected to arrange for the necessary labor, sand, gravel, cement and forms if concrete is required. While construction is under way a technician is on hand to supervise the job. When construction is completed you are expected to fertilize and seed the dike and spillway areas in order to establish a grass cover to prevent erosion.

All this sounds too good to be true—There must be some hitch. There is. You must be patient. Most Districts have the policy of giving priority to those who are endeavoring not only to make a living at farming but through conservation, to improve their farms and their living standards. But, in any event, don't expect to become a soil conservation district co-operator today and the owner of a pond tomorrow. But, for our money, all this assistance is worth waiting for, we assure you.

New York State Extension Service

If your property is not located within a Soil Conservation District your next best bet for help with a farm pond is the State Extension Service. This Service currently employs 11 District Agricultural Engineers who cover practically the entire State, and whose principal responsibilities are to advise farmers on new equipment and new construction. However, some of their time is spent on other projects—which include farm ponds. It should be apparent that these engineers are spread thinly, and once again your patience will be a virtue.

The County Agricultural Agent is the local representative of the State Extension Service, and your contact with these engineers is through your local County Agent. There is a County Agent (with offices usually located in the county seat) in 56 of the 62 counties in New York State; only the New York City counties and Hamilton County are without a county agent.

Upon presenting your ideas to the County Agent, he may arrange for one of these agricultural engineers to visit your property and inspect the proposed pond site. If it appears to him that it's suitable, he can make up a working plan, offer technical advice and give some idea as to approximate cost. But from here on in, you will probably be on your own; the County Agent may be able to advise you as to reliable contractors, but it will be up to you to make your own arrangements.

Incidentally, the County Agent's office is also a source of several printed bulletins on various aspects of conservation, including farm ponds. These are designed to help you and are available for free upon request.

N. Y. S. Conservation Department

This agency can furnish assistance in the development of *wildlife ponds*—which are usually larger but shallower counterparts of their country cousins, the farm ponds. They are designed primarily for the production of waterfowl and muskrats but also provide good habitat for other wildlife. The wildlife pond program is administered by the Bureau of Game (of the Division of Fish and Game) through its nine District Game Managers—with offices located at Ray Brook, Watertown, Delmar, Poughkeepsie, Stamford, Ithaca, Syracuse, Rochester and Olean.

Under a lease agreement the Conservation Department can develop (and will assume all costs of) a wildlife pond on private lands if the site is suitable from both a biological and engineering standpoint. However, if a landowner or organized sportsmen's club is willing to foot the bill for its construction, the Conservation Department can co-operate to the extent of making the survey and designing a wildlife pond. In this case a lease—which in effect places the pond under the jurisdiction of the Conservation Department for a period of years, is not required.

The same general engineering requirements which apply to a good farm pond site also apply to a wildlife pond site. Soils must be suitable, pond area must be in proportion to watershed area, and there should be a good natural location for a dam. In addition, the area to be flooded must be relatively flat, so that several acres can be covered with from two to three feet of water by as low a dam as possible. If you feel that you have such a site on your property and are interested in developing it as a wildlife area, get in touch with the District Game Manager located nearest to you—or write the Albany office of the Conservation Department to arrange to have a representative visit your property, look over the site, and explain the program in detail.

Other than to provide some technical advice, the Conservation Department is not in a position to materially assist with the construction of an ordinary farm pond. The wildlife pond program is financed mostly by Pittman-Robertson funds derived from a Federal tax on arms and ammunition. Thus, this fund is obviously supported by the sportsman's dollar (for he is the fellow who buys most of the arms and ammunition, pays the tax and so creates the fund). It is therefore difficult to justify the expenditure of this money to develop a farm pond which does not provide adequate benefits for wildlife, and for the sportsmen whose money has gone into the fund.

U.S. Fish and Wildlife Service

This public agency offers no direct material assistance in the development of a pond. We mention it here simply to clear up any possible misconception on this score. However, it can be one source of fish with which to stock your pond, provided, of course, that it turns out to be a farm fish pond. Fish may be available from Federal fish hatcheries upon application to the U. S. Fish and Wildlife Service, Washington 25, D. C.

SHOULD you miss the boat on any or on all of these sources of assistance, you are on your own. In this event we suggest that you not only secure as much printed material on the subject as possible, but that you also take a look at some ponds that have been developed properly. For your own pond, you can probably engage the services of a professional engineer—and any reasonable fee charged may be well worth the cost. But at this point your own sense of values—and your own pocketbook—take over.

In the next issue of THE CONSERVATIONIST we plan to cover the steps involved in the actual construction of ponds, and to present some average cost figures for consideration.

—ROY IRVING

More about State Forests

THE State's enlarged reforestation program was initiated in 1929 for the specific purpose of reforesting hundreds of thousands of nonproductive acres situated on abandoned farms, and generally located outside of the Forest Preserve Counties. During that year, 1,951.57 acres were acquired. Today we have 550,245.50 acres distributed over 368 State Forest areas, each containing 500 acres or more.

The first efforts in the development of this program were directed toward acquiring the land and conducting a vigorous reforestation program. The latter was given a tremendous impetus by the advent of the Civilian Conservation Corps during the 1930's. In addition to tree planting, the C.C.C. added materially to the improvement of the land by constructing truck trails, fire lines, water holes and performing forest stand improvement work in the natural forest lands. But the C.C.C. was discontinued at the beginning of World War II. This, combined with the manpower shortage which existed during the war years, resulted in a maintenance problem on many of our facilities which was impossible to meet. The forest plantations, nevertheless, continued to grow and grow—with the result that considerable acreage required immediate attention during the early post-war years. At that time a substantial sum was allocated to the Conservation Department for reforestation, thinning, pruning and rehabilitating the administrative and fire control facilities. These programs were virtually completed in 1953.

The Department's next objective was to develop long range forest management plans for *each* State Forest area. In the conduct of any business it is necessary to have an inventory of the assets on hand, and one of the first steps to be taken in the management phase of this program was the development of a planned forest inventory. In this connection, the Bureau of State Forests (with the assistance of the District Foresters) is currently working out the details for developing standard procedures for keeping records, mapping and making growth studies, yield studies and volume determinations. The Department is pleased to announce that the State College of Forestry at Syracuse, New York is co-operating in this work—especially in the field of volume determination by means of aerial photographs. A test run is presently being conducted on Oneida State Forest 20.

Along with the inventory, we are trying to establish adequate markets for the raw materials which are now available, and for those which will become available as our management programs for each of the State Forests develop.

It is emphasized at this point that the plantations which are now ready for the first thinning have an average diameter, breast high, of about 3 to 5 inches. Thus, the presently available material does not lend itself readily to the demands of commercial operators. Nevertheless, exploratory work is being done continually to find suitable outlets. In addition to the small sales made during this year, two large companies have become interested in our small sized timber—one for pulpwood, and the other for fence posts and pole material. We hope that this interest can be further stimulated and a successful business relationship established between the wood using industries on the one hand, and the managers of our State Forests on the other.

It is important to note that nearly half of the total acreage included in State Forests is covered by *natural* forests, and small timber sales are being made from these lands as well as from our plantations. They are not harvest cuttings as such, but should be looked upon as necessary forest stand improvement work, required now in order to enhance the future value of the forests.

Income is a very important consideration in management—as it always has been in the minds of the planners. In the business of forestry, as in other businesses, multiple use of the available assets must be contemplated in order to assure success. We were just plain lucky that oil and gas were found on some of the State Forest areas early in the development of the program. Revenues from gas and oil leases — as well as from Christmas tree sales, timber sales, sales of hay, pasture privileges and miscellaneous items—contribute significantly to the income presently being derived from the areas, and to date approximately $650,000 has been realized in revenues from these sources. But we are confident that this is only the beginning, and that all of us can look forward to seeing *major* returns flowing back from our investment in the State Forests in another ten years.

Since income has been discussed, we must also look at expenditures. The Department is making every effort to expend the appropriated monies in the most effective places, and the work being done is continually reviewed in order to find ways and means of accomplishing it as economically as possible. For instance, field experimentation has been conducted on the use of chemicals for eliminating trees in the first thinning operation on the plantations, and early findings indicate that a substantial saving in per acre costs can be made by using these substances. But, there may be dangers, and therefore further studies on all of the factors involved are being continued.

In determining the priorities of work, first consideration is given to those projects which are necessary to protect our investment and bring the plantations through to harvest. The major projects included in the present management program are forest plantation thinning, pruning and reforestation. Thinnings are necessary for maintaining growth and vigor, while pruning is an operation which removes the lateral branches from selected individual trees for the express purpose of eliminating knots and developing high grade lumber. The Department is currently emphasizing these two projects. In addition, of course, the truck trails, storehouses, fire lines, water holes, etc.—which contribute to the over-all protection of our investment—must be and are regularly maintained.

Since the rehabilitation and capital improvement phase was completed in 1953, a definite work plan was developed to assure that the projects outlined above would receive full attention. The table below shows the work load objectives and accomplishments April 1, '54-Feb. 1, '55.

In conclusion, we believe that an excellent start has been made in the beginning of the management phase of the State Forest Program. We hope and believe that more and more favorable developments can be reported in the future.

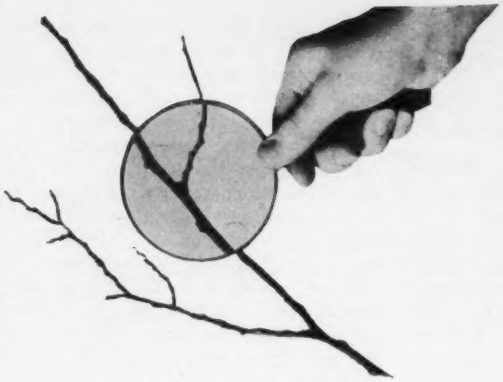
—CHARLES F. BAAR,
Supervising Forester

Objectives, Accomplishments

Projects	Objectives	Work Accomplished
Reforestation	6,112 Acres	7,429.3 Acres*
Maintenance of		
Fire Lines	250 Miles	298.7 Miles*
Truck Trails	110 Miles	263.0 Miles*
Water Holes	200 Holes	185 Holes
Fencing	30 Miles	28.44 Miles
Pruning	3,659 Acres	4,876.32 Acres*
Thinning	9,137 Acres	9,214.94 Acres*

* The over run can be attributed to good utilization of manpower and savings made in the forest inventory project —which was not fully developed in 1954.

This is the stately elm, at the entrance to the State University College of Forestry compus, on whose tissue elm bark beetles left their killing spores



European elm bark beetle feeds on twig crotches like this one. It opens wound, and reaches wood tissues, where it deposits the disease-causing spores

The College Elms

EVEN the State University College of Forestry in Syracuse can lose its elm trees in the wake of the rampaging Dutch elm disease in New York. Last November 19 an ornamental elm at the very entrance to the College campus was cut down and removed to the dump to be burned. To launch a public education campaign on the control of the disease, Syracuse newspaper and TV cameramen recorded the operation.

Removal of afflicted trees, and burning or debarking all dead elm material are primary control measures. The disease is caused by a fungus which is carried by the European and native elm bark beetles which can fly from 700 to 1,000 feet. Destruction of the breeding places of these beetles before they emerge in the Spring will help to limit the spread of the disease.

Prior to the removal of this particular elm, Dr. Hardy L. Shirley, Dean of the College of Forestry, met with Mayor Donald Mead of Syracuse, Willard Schultz of the New York State Department of Agriculture and Markets, and representatives of the Natural Resources Council of Onondaga County to discuss the seriousness of the Dutch elm disease and measures for control. Dean Shirley pointed out that more than 400 diseased and beetle-infested trees had been located in or near Syracuse by November of 1954, and emphasized that the incidence had risen from one tree in 1951, to six in 1952, and to 30 in 1953. The Dean concluded with a remark which has statewide significance: "There is need for concerted efforts and co-operation of city and county officials, of construction contractors, and above all, of property owners, to check the spread of Dutch elm disease — which is destructive of both beauty and property values."

—JEROME G. KOVALCIK,
Assistant Professor of Forest Extension

It is important to point out that the program for the control of Dutch elm disease is a responsibility which has been assigned to the State Department of Agriculture and Markets. There has been a certain amount of confusion in the mind of the public about this, as it seems reasonable to many people that a disease having to do with trees ought to be a matter for the Conservation Department to handle. However, since Dutch elm disease is primarily a *shade tree* problem, not a forest problem, the decision was made some years ago to place the control problem in the Department of Agriculture and Markets, and any inquiries with regard to Dutch elm disease should be referred to that agency.

Another point on which considerable confusion exists is with regard to the distinction between Dutch elm disease and attacks by the elm leaf beetle. It is easy enough to distinguish between these two conditions if you will remember that the presence of Dutch elm disease is indicated by a *sudden wilting* and *yellowing* of the foliage on a *single branch* or *at the top of the tree.* Elm leaf beetle damage shows itself by injury to the leaves over the entire tree, as follows:

(1) In the early part of the season, by the appearance of rounded holes in the leaves made by the adult beetles, and (2) in midsummer, by the skeletonizing of the leaves so that the *whole tree assumes a rusty appearance.*

Dr. Howard C. Miller, College of Forestry extension entomologist, examines streaked wood fungus invaded

Undercut finished, beautiful elm topples. In prime at 35 years, it might have lived 135

Workmen carefully dispose of dead elm material which can house disease-carrying beetles

This is only way Dutch elm disease can be controlled. Dead elm is burned and with it the beetles hatching inside

Our Warblers

Feathered Visitors from the South

SOME early morning in April or May, you may see a group of people peering intently upward through binoculars. Don't look for the flying saucers; these people are probably part of a growing segment of the public which watches each year for the Spring migration of our many warblers. These birds, small, often colorful, are insect-eaters enroute to their nesting sites in the northern United States and Canada after a Winter spent in warmer climates. During their migration (which may be more than 2,500 miles) they eat a tremendous quantity of insects and undoubtedly are an important factor in forest ecology and conservation.

One of the most intriguing aspects of the warbler migration is the birds' ability in the field of navigation. Some of the warblers travel mostly at night, even during heavy fogs. With the migration routes leading over mountain ranges and forests, over extensive bodies of water and past tall structures including the Empire State Building it is surprising that the warbler mortality is so low. But most of them survive, arriving at their nesting areas within a few days of the same date every year. Not only do they get through in a general direction, but in most cases they return to their former nest sites. This is indicated by banding records.

When the nesting season is over the warblers begin to drift South again. At this time they are wearing their new feathers which, in some species, are comparatively drab and blend well with the Summer foliage. Seldom singing as they did in the Spring, they frequently are unnoticed at this time of year.

Because of their part in the ecology of our forests and their appeal to so many people, we decided to show you, in color, the Spring warblers that normally occur in New York State. We wish to thank the American Museum of Natural History for the loan of the specimens from which these paintings were made.

—H. Wayne Thimm

MOURNING WARBLER
CONNECTICUT WARBLER
HOODED WARBLER
WORM-EATING WARBLER
TENNESSEE WARBLER
BLUE-WINGED WARBLER
ORANGE-CROWNED WARBLER
NASHVILLE WARBLER
YELLOW-THROAT

BLACK AND WHITE WARBLER
PALM WARBLER
BLACK-POLL WARBLER
PRAIRIE WARBLER
KENTUCKY WARBLER
CANADA WARBLER
PINE WARBLER
YELLOW WARBLER
GOLDEN-WINGED WARBLER
WILSON'S WARBLER
YELLOW-BREASTED CHAT

Missouri's hunting accidents

The following is reprinted verbatim from a recent press release issued by the Missouri Conservation Commission:

There are 13 Missourians who won't be reading this article. There are 31 other Show-me staters who, if they see this, will feel a personal interest.

The 13 who won't be reading this article are those who died as hunting casualties in 1954. Thirty-one other Missourians, sadder and wiser men, are those whom death brushed close: they were wounded but survived.

The 1954 hunting casualty reports gathered by the Conservation Commission make frightening reading. In 25 cases no one was actually firing at anything—just handling a gun. In 21 of the 44 cases, the shooter was a juvenile, under the age of 21—the youngest only eleven. Sixteen victims killed or wounded themselves. At least 17 involved in shooting accidents were rated as inexperienced in gun handling.

During deer season, with over 45,000 hunters afield, there were no fatalities this year. Five men were wounded, two by unknown hunters, two by companions and one with his own hand.

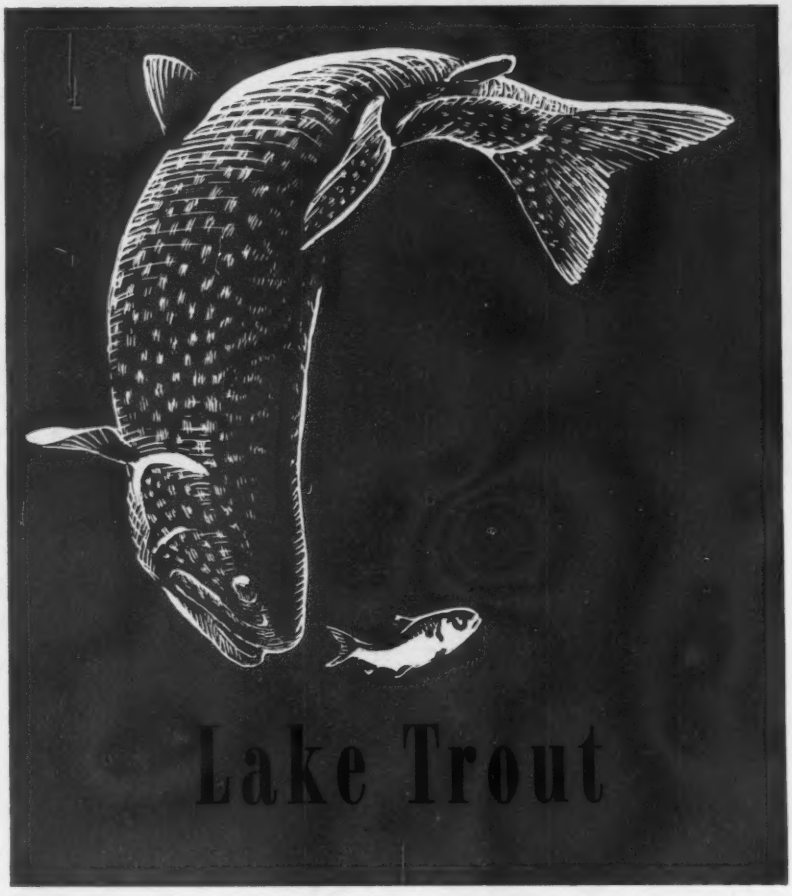
The rabbit season—Missouri's longest popular open season—accounted for nine dead and 13 wounded. The most obvious fact emerging from the reports is that too many youngsters are afield after rabbits with too little know-how. Six of the dead and seven of the wounded were under 21 years of age. Perhaps also significant is the fact that most of these casualties were from small towns, under 10,000 population. No kids from metropolitan cities were involved.

Squirrel season, also open for several months, caused three deaths and four woundings. These were all adults, but six of seven shot themselves. Try to figure that out. And duck hunting, with only two woundings and no fatalities, revealed a boy attempting to shoot ducks with a .22 rifle who bagged a harmless fisherman instead.

One of the brightest spots is the quail hunting picture. This extended and most popular season, with between 80,000 and 100,000 gunners afield, produced only two woundings.

Probably the zaniest "accident" reported was the case of the two young Kansas City hunters, which occurred near year's end. One ordered the other to run in front of him to "see if I can hit you." He could; the companion died.

Shotguns were involved in 24 accidents; high caliber rifles in four. In 14 accidents, .22 caliber rifles were involved, and in two cases .22 pistols.



IT seems odd, from the cold point in February where this is being written, that any fish, much less a game fish as highly esteemed as the lake trout, would choose to live in the deepest, darkest, coldest water it could find. But in general, that's where the lake trout is found in New York—in the deepest, coldest water. It comes into shallow water at times, but only in Spring and Fall when the shallows are cold.

Actually, the lake trout is not so dumb. It has adapted itself to a situation where temperatures are relatively constant, varying from about 40 to 50 degrees Summer and Winter, while we humans struggle with variations far greater than that in a single day. Light conditions also are quite constant, and depth itself is a protection against many enemies, including man. So, compared with the penguin or the tsetse fly, the lake trout has picked a nice location.

Relatively few species have elected to live in the deep waters of our lakes and this scarcity of competition undoubtedly is an important reason why lake trout get along so well there. The usual associates of lake trout are whitefish, suckers (especially the fine-scaled suckers), sculpins and, less directly because more pelagic in habit, the cisco or lake herring. Smelt might be added to this list although its presence in New York lake trout waters is due to artificial introductions. The lawyer or ling is another associate, albeit a rather disreputable one, but fortunately it is limited in distribution to the lakes of relatively low elevation.

Among several other species which range more or less extensively into the domain of the lake trout are brook, brown and rainbow trout, landlocked salmon, the lake chub, yellow perch and (unfortunately for the trout) walleyed pike and even smallmouth bass. However, lake trout get along with perch, bass and other competitors more successfully than other salmonids.

The lake trout has several other outstanding qualities which have helped him earn the relatively exalted position he occupies in angler esteem. His average size is large — larger than that of any other salmonid in New York waters. (Although the State record stands at 31

This photograph shows what fin-clipped lake trout look like when taken by anglers

pounds, Jordan places the upper limit at 125 pounds.) For table fare, the lake trout is unexcelled; even the bones and scales are negligible problems. Angling, while rather specialized, produces fairly consistent results to the experienced fisherman, but, at the same time, the environment and habits of the lake trout insure that he's no pushover. It has been demonstrated in many lakes that, with reasonable management, lake trout populations can be maintained at consistent high levels despite heavy angling pressure.

Some of the details of lake trout life history and distribution have been given in a previous issue (THE CONSERVATIONIST, D-J, 47-48). Spawning of the species is generally successful in the big, clean, deep lakes which are the typical lake trout waters. Nevertheless, spawning success is known to vary widely according to conditions. Influence of some of these conditions is fairly well known, but that of others is largely speculative. For example, some critical questions about which little is known are: What are the factors causing deep spawning in some lakes and shallow spawning in others? What are the functions of lake currents with respect to spawning success? Are springs or seepage points involved in selection of spawning beds? Which are the predators or other organisms most likely to cause egg or fry losses?

While these probably are not the questions of most immediate practical concern, specific answers to them and to other related questions would make lake trout management easier and more efficient.

Fortunately fish culture methods, as with most other salmonids, are well established for quantity production of fingerling and yearling lake trout. Lakes in New York with characteristics favorable for rearing them can be assured of receiving all the young lake trout they can produce. At present State hatcheries are stocking 70 lakes and reservoirs* with lake trout. A number of other lakes maintain successful populations of lake trout naturally or are unstocked because located on privately-controlled areas not open to public fishing.

The foregoing should make it clear that the lake trout is one of the most valuable and popular game fishes of New York. As a consequence many aspects of lake trout management have received and are receiving a considerable amount of attention from fisheries personnel of the Department. To furnish a better factual background for use of stock produced—and for improvements of management generally—research has been undertaken to answer some of the more immediate and pressing problems.

Research Projects

1. Studies of lake trout have been of three general types. First, biologists working with the egg-taking crews at Seneca Lake and, to a limited extent, also at Raquette Lake, have been making life-history studies of the spawning populations. This has included collection of scale samples for growth studies and tagging and fin-clipping designed to afford further information on composition of spawning populations and on migrations of the adult trout.

Information already published on the Seneca Lake work (see Annual Reports of the Department 1944-45, 1946 and 1947) indicate that this lake is sustaining heavy and successful angling with no sign of depleting the resource. For example, on the basis of tag returns and known ratio of tagged to untagged fish in the population, the 1947 catch was calculated to have been at least 13 tons of lake trout. Lake trout fishing is big business as one can readily gather from this figure.

Information on migration behavior of Seneca's lake trout is of considerable interest and may be of practical value to anglers. It was found that trout tagged in the Fall at the spawning grounds at Peach Orchard Point were well distributed over all parts of the lake by the following May. The return to the spawning grounds in this lake is gradual, the fish moving back slowly throughout the Summer. Not all return to the same spawning areas; about 50 per cent of those tagged at Peach Orchard returned there, 25 per cent to other spawning areas on the same side of the lake, the remaining 25 per cent to beds on the opposite side of the lake.

Spawn-taking operations at Raquette Lake were suspended in 1953, following a poor spawning season in 1952. Growth-rate studies, backed by returns of marked trout had shown the fish in this population to grow very slowly, especially after maturity. Among several factors which may be limiting success of spawn-taking in this lake, failure of some of the trout of mature age to spawn every year may be important. This could very possibly result from poor nutrition and slow growth rate. (Studies of the lake trout in Great Bear Lake, northern Canada, indicate that mature lake trout there spawn only about every three years.)

Studies of the Raquette Lake spawning populations in 1941 and 1942 also provided factual basis for this theory. Of over 1,000 spawners marked in 1941, only about 8 per cent were recaptured in 1942. This demonstrated that either some

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* These are the lakes stocked with lake trout by the Department (some waters are in two or more counties): *Cayuga County:* Owasco Lake. *Clinton County:* Chazy Lake, Silver Lake, Upper Chateaugay Lake. *Essex County:* Balfour Lake, Bigsby Pond, Crane Pond, Gooseneck Pond, Lake George, Mirror Lake, Paradox Lake, Lake Placid, Sand Pond, Schroon Lake, Warm Pond. *Finger Lakes County* (fish culture designation): Canandaigua Lake in Ontario and Yates; Cayuga Lake in Cayuga, Seneca and Tompkins; Keuka Lake in Yates, Steuben and Schuyler; Seneca in Seneca and Schuyler. *Franklin County:* Deer Pond, Floodwood Pond, Follensby Clear Pond, Gull Pond, Hoel Pond, Lake Kushaqua, Ledge Pond, Little Clear Pond, Little Green Pond, Long Pond, Loon Lake, Lower Saranac Lake, Lower Spectacle Pond, Meacham Lake, Polliwog Pond, Rollins Pond, St. Regis Lake, Upper St. Regis Lake, Upper Saranac Lake, Lake Clear. *Hamilton County:* Blue Mountain Lake, Lake Eaton, Eighth Lake, Fawn Lake, Fourth Lake, Gilman Lake, Indian Lake, Lewey Lake, Limekiln Lake, Piseco Lake, Raquette Lake, Seventh Lake, South Pond. *Herkimer County:* Big Moose Lake, First to Fourth Lakes, South Lake, Woodhull Lake. *Jefferson County:* Lake of the Woods, Millsite Lake, Lake Ontario, Sixberry Lake. *Lewis County:* Soft Maple Pond, Soft Maple Reservoir. *Oneida County:* White Lake. *Onondaga County:* Skaneateles Lake. *Otsego County:* Otsego Lake. *St. Lawrence County:* Big Trout Pond, Portaferry Lake, Star Lake, Sylvia Lake, Trout Lake. *Warren County:* Lake George, Schroon Lake.

of the spawners were skipping a year or were spawning at another location. Demonstrating the slow rate of growth, of 17 tagged fish recaptured after one year in this lake, six had gained slightly in weight, two weighed the same and nine had actually lost weight. All, however, had gained slightly in length.

2. The second type of research project was directed toward determination of the importance of possible racial differences in lake trout with respect to behavior both in the hatchery and after stocking. Evidence that differences in behavior *do* occur between fish of stocks derived from different lakes (Seneca, Raquette and Saranac) was discovered in hatchery experiments. Further evidence of such differences was found as the result of planting and recovery experiments carried on in Raquette Lake with Seneca and Raquette stocks. These experiments were reported in detail in issues of the *Progressive Fish Culturist* (Vol. 14, Nos. 1 and 2). There is some evidence that when Raquette Lake and Seneca Lake stocks are planted together in Raquette Lake, the Raquette Lake stock may be considerably more successful. These results are suggestive with respect to practical planting methods, but are not yet entirely definitive.

3. The third type of project was designed to obtain information concerning two very practical questions: (a) To what extent is lake trout stocking (as compared with natural reproduction) contributing to the fishing in various types of lakes; and (b) how do results of stocking fingerling and yearling lake trout compare, again in various types of lakes? While the need for this information had been long felt, the fine work of Cornell University's Dr. Webster and students at Cayuga Lake on lake trout stocking there (see p. 29 this issue) lent impetus to the undertaking by Department personnel.

This project, carried on in eight lakes in addition to Cayuga from 1950 through 1953, involved fin-clipping nearly 600,000 young lake trout—and thus became by far the most extensive marking and recovery project for fish so far carried on by this Department. A few recoveries have been secured from experimental netting in 1953 and 1954, but so far not enough to provide significant conclusions. Most numerous recaptures have been made at Seneca Lake (43 fish) and here comparative recoveries of fingerling and yearling stocks were in a ratio of 1 to 6.6. Considering the small numbers of returns, this ratio does not differ significantly from returns at Cayuga Lake as determined by Dr. Webster's work. Returns from the smaller lakes of different characteristics should be of considerable interest. The slow rate of returns to date is not unexpected, since lake trout grow slowly and the small ones are notoriously difficult to catch by any method.

A somewhat similar marking and recovery project is being carried on cooperatively by the Province of Ontario and the State of New York in Lake Ontario. Here, however, the primary objective is to determine whether stocking is a feasible method of increasing lake trout production in this water. In this lake the tremendous area, with relation to hatchery stocks available for use there, has an important bearing upon feasibility of the stocking method.

Planning for this project provided for equal plantings of marked lake trout to be made by Ontario and New York over the period 1953-1956. To date, approximately 40,000 marked fingerlings have been planted in two areas of the lake by New York hatcheries. For its part, the Province of Ontario, during the same period, has stocked 20,000 fingerlings and 15,000 yearling lake trout. Since the lake trout is a relatively slow-growing, long-lived fish, it will be several years before any significant results can be expected from this project.

Management

As with any production problem, maintenance of lake trout production at a high level for the angler depends in large part upon the availability of comprehensive information about the species in general, and in particular about its adaptability to conditions in available waters. Tools to work with are those which may increase the lake trout population either directly or indirectly by improvement of physical or biological environment, and those which may help provide an equitable harvest. Practically speaking these tools are stocking, various population control methods, and regulation of season, size and creel limits.

Department hatcheries at present provide a little less than 2,000,000 lake trout annually for stocking. Stocking a given lake efficiently involves making a series of decisions based upon general background and knowledge of the specific water concerned. The initial decision, whether to stock at all, depends primarily upon success of natural spawning and survival in the lake. Contrary to widely held opinion, fishing pressure affects this decision very little, for, so far as known, angling does not deplete spawning populations below the critical level in any of our lakes. If conditions are favorable for spawning and survival of young trout, an adequate annual crop of young may be produced. Additional young hatchery trout must utilize the same food supply drawn on by the naturally produced young, and, if these are produced at capacity, stocking will not add to the population available for the angling fraternity.

Other decisions, some of them interdependent, involve size and age of trout to be stocked, racial type, best time of year, most favorable planting locations (involving especially depth and type of bottom) and other factors. It is expected that investigations outlined above will provide a better basis for making these decisions.

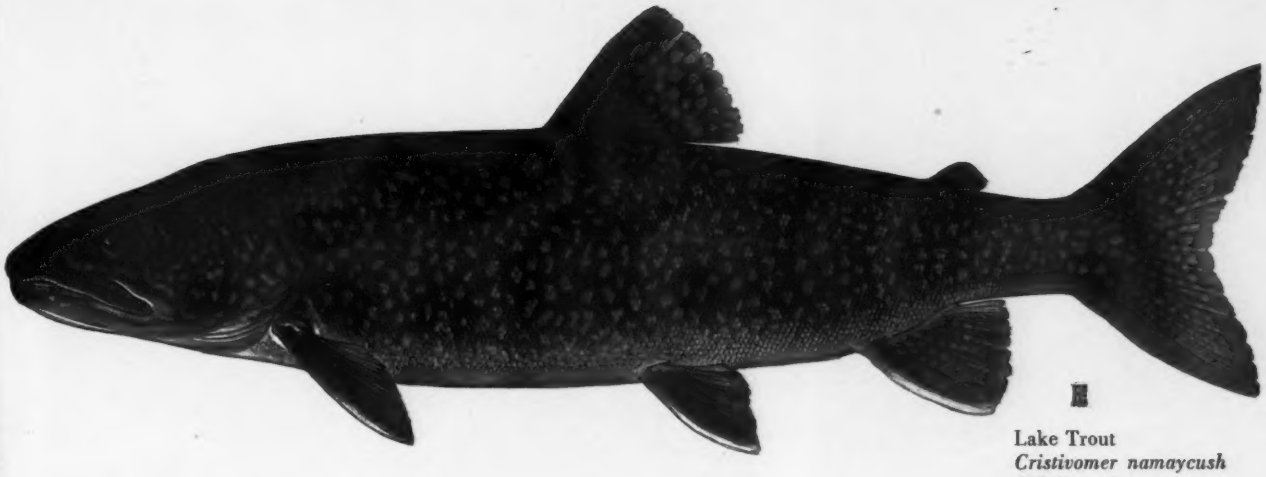
Population control methods appear to be less practical for lake trout management than for some other species. The fact that the important lake trout resources are found in sizeable, deep lakes limits application of presently known control techniques. Attempts have been made to control competitive species (walleyed pike in Lake Pleasant and Sacandaga Lake, and smelt in Canandaigua Lake) but results were disappointing or not clear-cut with respect to lake trout welfare. Associated competitive and predatory species often affect lake trout production adversely, however, and means of reducing such limitations offers a fertile field for future investigations.

As to regulations, one of their functions is to help control populations so as to maintain a balance favorable to best production of the desirable species. Lake trout limits on size, season and creel—and prohibition of sale from inland lakes—are designed primarily to promote best use of the resource by anglers and to spread the catch as equitably as possible.

Angling methods

There are, of course, several ways of fishing for lake trout which (on the right day) may be successful. Trolling methods and equipment are many and varied; one can still fish with bait with or without benefit of a baited area; early in the Spring, fly or spin fishing with bucktail or feather fly is productive. Except for this last method, many good fishermen classify lake trout angling as just plain boring. Some say the type involving constant arm waving (jerking or "jumping" a line) often is more exhausting than exciting. Still, fish are caught with regularity by all methods. And when your catch may run anywhere from two to thirty pounds of beautiful, gamy, tasty trout, the many lake trout fishing addicts are not so hard to understand after all.

—C. W. Greene,
Senior Aquatic Biologist



Lake Trout
Cristivomer namaycush
(Walbaum)

Cayuga-

A Lake Trout Laboratory

by Dwight A. Webster, *Department of Conservation, Cornell University*

OF all the Finger Lakes, Cayuga appears to have enjoyed the poorest reputation as a lake trout producer through the past half century. The late George C. Embody, Professor of Fish Culture at Cornell, noted in 1922 that "Lake trout are sometimes taken in Cayuga Lake . . . They should . . . occur in large numbers in the deeper parts of the lake where the waters are cold and clear unless some undetermined factor is working to their detriment." And shortly thereafter (1927), when Cayuga Lake was included in the Biological Survey of the Conservation Department, E. H. Eaton wrote: "We have been unable to find any condition of the water which would explain the scarcity of trout in Cayuga Lake and believe it should be attributed not to the condition of the water but to the enemies of the fish, to illegal fishing and to mistakes in planting." (The latter reference was to releasing the trout from shore in the Summer, when water temperatures were high.)

The status of the lake trout population in Cayuga Lake received cursory attention from a former Cornell graduate student, Dr. H. John Rayner, about a decade later. "During 1939 and 1940 it is doubtful if more than fifty fish were taken by anglers. The large size of the fish taken (10 to 27 pounds) is possibly indicative of a small population. Gill nets set on a once famous spawning ground produced three fish in 1939 and none in 1940, even 'though the sets were made every five days from the last of August to the middle of December."

The documentation is thus adequate to substantiate the view that Cayuga's waters have, in fact, not supported an appreciable stock of lake trout for many years. However, in the early 1940's, there were reports from the regular 'though limited numbers of lake trout fishermen that the fishing had improved, and that many of the fish were of small size. Then the appearance of lake trout in experimental gill nets set in Cayuga Lake in the Fall of 1944 was convincing proof that there had been a marked increase in the lake trout population. The word had gotten around sufficiently by 1946 to stimulate considerable fishing, and a phenomenally high catch of lake trout resulted.

What could have been the cause of this sudden happy state of affairs? It was a subject which invited investigation, with proximity to Cornell University and interest in training students being additional motivating factors. Accordingly, following discussions with Dr. W. C. Senning and O. R. Kingsbury of the Conservation Department in 1946, a long-term research program was set up. One of the subjects which appeared worth exploring was a recent change in the lake trout stocking policy. This involved the initiation of yearling trout plantings in late Winter or early Spring, in addition to the usual late Summer fingerlings. The first substantial stocking of yearlings (6,000) was made in 1939, and annual plantings of that order were subsequently made. This time of year was more favorable, as air and water temperatures were cold. But of course the possibility also existed that the increased fish population was the result of greater success of natural spawning. Rayner had previously suggested the possibility ". . . that the lake trout are being destroyed as eggs or young fish in Cayuga Lake . . . In the Fall and Winter when a strong wind is blowing, the mud which is stirred up by the currents may be seen as a yellow area streaming from the points in the direction of the wind-driven currents. Such mud settling on the lake trout eggs may have a deleterious effect."

The program of study evolved consisted of marking (by fin clipping) all the hatchery yearlings, and also a known fraction of the fingerling lake trout planted in Cayuga Lake. From 1946 through 1954, a total of 64,600 yearlings

Lake trout in gill net. Fish ramming it become entangled in fine thread of mesh

Cornell University fishery crew, Paul Neth, Scotty Little and Bill Lyon (left to right), at work processing lake trout taken from nets. Data on length, weight, number of lamprey wounds, fin clips and scale samples are taken. If trout is vigorous . . .

and 730,000 fingerlings were planted; since 1950 the annual stocking has been stabilized at 8,000 yearlings and 80,000 fingerlings (half of which are marked). The New York State fish hatcheries at Bath and Caledonia have reared the lake trout from eggs obtained from wild Seneca Lake fish. Fingerlings were scattered over deep water using large private power boats or in recent years, the Game Protector's patrol craft. During distribution the fish were carried in tanks supplied with oxygen to keep them in as good condition as possible. And yearling lake trout have been released from shore at Taughannock Point.

As in many studies of this sort, getting started by planting marked fish was the easiest part of the project. *Adequate follow-up* is the time-consuming part, although by no means the least interesting—as the accompanying pictures may suggest. In the Cayuga work it was decided to use gill nets of varying mesh sizes to sample the lake trout population. This decision was based on the fact that lake trout are very susceptible to capture by gill nets, and that a census of the fishermen's catch to check for marked fish would be impracticable to attempt with the resources available. Furthermore, since lake trout are frequently not kept until lengths of 20 or more inches are attained, this would necessitate a time lapse of 4 or 5 years before the results of any one planting could even begin to be evaluated.

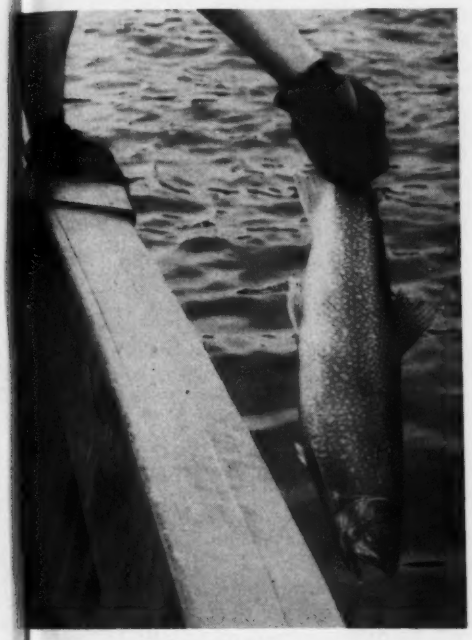
But many questions arose in attempting to set up a sampling program. How long should the nets be? Where in the lake should they be set? How deep? How often? Investigational work is frequently very expensive, and it is important to determine in advance the kind and amount of information that will provide evidence bearing on the problem to be studied. Even with the best of planning the vagaries of biological sampling often produce unexpected shortcomings in the final data.

The study on Cayuga lake trout did not arise full blown overnight. Answers had to be provided to some of the above questions. Furthermore, it was desirable to incorporate certain features into the sampling which would be useful in measuring the abundance of the lake trout population and also of its main food item, the alewife or sawbelly. Thus, the summers of 1949 and 1950 were given over to exploration and preliminary study.

Fishermen's reports indicated that there was a Summer concentration of the larger lake trout in the vicinity of King Ferry. The preliminary and subsequent sampling definitely confirmed this; about five times as many trout of 22 inches or over were taken in this area as elsewhere in the lake in July and August. A major proportion of Cayuga Lake exceeds 300 feet in depth, but it was found that the net catch of lake trout dropped off at depths over 150 feet. Thus, netting in the depths would be unprofitable and could be eliminated. (Note that this does not mean that lake trout may not be found in the middle of the lake; there is no doubt that they do occur there, but well off the bottom, feeding on the sawbelly schools that range the open waters of the lake.) Baby lake trout below two years of age were poorly sampled by the nets, but trout of two years (9-10 inches) and older were well represented. Young lake trout of about 20 inches or less were generally distributed about the entire lake, excluding the shallow warm water at the north and south ends.

These and other salient features resulting from this probing were incorporated into a final sampling design. Cayuga Lake was divided into five areas: The Summer concentration area, the planting area in the vicinity of Taughannock Point, the central basin of the lake, and the deeper water adjacent to the shoals at the north and south ends. It appeared that fishing a total of 25,000 feet of gill net during the Summer months could be handled with convenience and yet yield an adequate enough sample (the number of lake trout taken in this quantity of net has varied from 200-300 each year). The sample unit consisted of a gang of 5 nets, each 100 feet long and varying in ½-inch steps from 1½-to-3½-inch mesh size (stretched

. . . tag is placed on lower jaw. On side of specimen note open wound left by lamprey eel (below the gloved hand)



Back in Cayuga. To keep in good condition, trout are held on boat in tanks of cold water pumped up from the depths

A fin-clipped lake trout. Missing left belly fin shows no tendency to grow back in this specimen. Frequently it may grow back into a deformed fin or into a spike

measure). Five of these gangs were fished at one time and each of the five areas we've enumerated was sampled once in July, with a repeat in August. The nets were fished at right angles to the shoreline, starting in 30 feet of water in July and going to 50 feet in August (to allow for deeper offshore distribution as the water warmed up); nets were set in late afternoon or evening and lifted the following morning. The field procedure is detailed in the accompanying photographs taken by Fred Mohn of the *Ithaca Journal*.

The results of the sampling through 1954 have shown some consistent and clear-cut results bearing on the subject of fingerling *vs.* yearling survival. In the seven-year classes ("hatches") sampled, yearlings outnumbered fingerlings by an average of about 4 to 1. It can be anticipated that the fingerlings should show a lower representation because they have been subjected to natural mortality in the lake for an additional 6 or 8 months. In fact the mortality of the fingerlings during this period can be estimated at 75 per cent, including losses contingent upon stocking procedure.

The question of whether it is advantageous to stock yearlings evidently becomes one of economics, hatchery management and problems of planting. For any given weight of lake trout produced in the hatchery, there would be about 4 times as many fingerlings as yearlings in the sizes currently stocked. Obviously, then, yearlings must show at least a four-fold superiority in recoveries—that is, show four times the survival, to equal the numerical advantage of fingerlings. By coincidence the actual figure observed was about 4. The conclusion follows that from a production viewpoint, yearlings offer little advantage over fingerlings if it can be assumed that the cost of rearing a pound of each is the same.

There may be other considerations, however. For example, if hatchery lake trout are in short supply, it is more efficient to hold them for planting as yearlings. From the standpoint of hatchery management, it may be that the most efficient use of space can be achieved by stocking the bulk of the fish as fingerlings, but carrying enough through as yearlings to complete the stocking policy. And from the standpoint of ease in planting, the use of yearlings has advantages; they are planted in the early Spring when surface waters are cold, and the fish are released under more favorable circumstances.

This reintroduces the question relating to the origin of the lake trout population which appeared in the 1940's. On the basis of present information it is reasonable to conclude that the initiation of the yearling plantings in the 1930's was responsible. But as marked fingerlings were also well represented in the gill net samples, it seems strange that the fingerling plantings of past decades did not make a better showing. There are abundant reports, however, current as well as old, that fingerling lake trout have not always entered the water in the best possible condition or location—which well may account for this situation.

These contentions are greatly strengthened by the fact that during the years that marked fish have been planted, the lake trout population in Cayuga Lake can be shown to be largely of hatchery origin. The data backing up this statement are derived in the following way: Since only half of the fingerlings stocked each year are marked, the unmarked lake trout of any given age can be the result of (1) natural production or (2) the unmarked fingerlings stocked. When the proportion between marked and unmarked fingerlings is known, the number of unmarked lake trout also of hatchery origin can be estimated. As an actual example, through 1954 there have been 64 recoveries of the marked fingerlings planted in 1950 and 60 recoveries of the yearlings. At the same time 75 unmarked trout of the same year class showed up in the sample. Since equal numbers of marked and unmarked trout were stocked, it is fair to assume that 64 of the 75 unmarked trout were also hatchery origin. The difference presumably represents natural spawning—or possibly sampling variation. We must therefore conclude that some condition or conditions adversely affect natural production of lake trout in Cayuga Lake prior to the fingerling stage. As suggested by Rayner, the suitability of spawning grounds might be a logical place to start looking for the answer.

Naturally one is interested in the application which the information forthcoming from the Cayuga studies may have to other bodies of water. This was one of the major reasons for a more generalized study on other New York waters, described, in part, in C. W. Greene's article in this issue. While the lack of adequate natural spawning in Cayuga Lake may be exceptional, the conclusion is unavoidable that under favorable circumstances the survival of hatchery lake trout is comparatively good. This is a welcome circumstance from the standpoint of management, but it also means that there are very real potential dangers from overstocking. The reasoning that "if some is good, more is better" does not necessarily hold when it comes to stocking.

THE BACK OF THE BOOK

Scattershots

And Department Activities

Fred Streever

On February 24th Fred Streever of Ballston Spa died after a long illness. His passing was duly noted in the newspapers, scanned by cursory readers—and that was that. But for sportsmen and conservationists who knew Fred Streever personally or through his writings, news of his death was more than just another obituary notice. They read it with a deep sense of loss.

Perhaps best known by the fox hunting fraternity—those who "live" to hear the deep music of the big Redbone and Walkers on the trail—Fred Streever was the authority. As a breeder, trainer and hunter he knew hounds and he knew the men who ran them.

Appointed to the Commissioner's Advisory Council, his advice was heeded not only on matters in his special field but on the broad conservation front as well. His counsel will be missed, for Fred Streever was a big, soft-spoken, gentle man with a naturalist's love of all living things and a philosopher's grasp of their meaning.

John Nemes

We learned today, as we went to press, of the death on March 30 of John L. Nemes, District Game Manager for the Conservation Department in North-Central New York.

A key figure in the Department's Game Management program, Nemes will be greatly missed by his fellow workers and by the thousands of sportsmen who learned to love and respect him for his often colorful but always sincere and constructive efforts on their behalf. An enthusiastic hunter and fisherman, Nemes combined a sportsman's "know-how" with thorough training in the biological sciences toward real accomplishment in conservation throughout his district in North-Central New York.

Nemes first joined the Conservation Department in 1946 and, following a number of special assignments, was appointed District Game Manager for the North-Central District in 1949. He was a graduate of the School of Conservation at Cornell University and a veteran of World War II during which he served as First Lieutenant in the Air Corp.

Public campsites open May 26

Campsite Caretakers will go on duty at the public campsites and Lake George Islands on May 26, but Cumberland Bay Campsite at Plattsburgh will open earlier —on May 16. The campsites will remain open with Caretakers in residence until September 15. Lifeguards will go on duty June 18. Camping accommodations are available at all public campsites except Northampton Beach on Sacandaga Reservoir—which has facilities for day use only.

At the public campsites and the Lake George headquarters islands (Long, Glen, Coopers) camping permits are issued upon arrival on a first come, first served basis and advance reservations cannot be made. Campers pay a service charge of 50¢ a night or $3 a week per camping permit. Each camping permit is limited to six individuals (not including infants under the age of two years). No charge is made for day use except at Cumberland Bay and North Lake campsites, where the parking service charge of 50¢ per car or $2 for trucks and buses is collected.

In 1954 a total of 1,055,428 individuals were registered at our campsites; 176,072 were campers and 879,356 were picnickers, bathers and others. In some regions, available camping accommodations are insufficient to meet demand, especially in July; 45,168 campers were temporarily accommodated on undeveloped sites and 15,725 campers were turned away in 1954, and approximately 75 per cent of this deficiency occurred in July.

—WM. D. MULHOLLAND,
Supt., Bureau Camps and Trails

Trees by the pound

With the season over for ordering trees from the State nurseries for delivery this Spring (and with the tree shipping season well under way) summaries indicate that the demand for trees this season will come close to the demand for the Spring of 1954. A total of 8,500 orders for over 31 million trees (for private land use only) were received.

Inasmuch as the shipping season only lasts about one month, more than one million trees will be shipped each day for that period. Only through the use of mechanical equipment can this production schedule be met. In the years before the war tree seedlings were lifted from the seed beds, counted by hand, tied in bundles of 50 to 100 and crated. In recent years this procedure has changed so that trees are lifted from the beds in bulk and are counted and bundled by an endless belt type of machinery operated mainly by women. This year a new method of counting is being tried out on a large scale.

The counting of trees will be by weight. Large size laundry scales have been installed and trial runs are being made to determine the weight of 1,000 Scotch pine two-year-old seedlings. When this factor is determined, all trees of this species for the day are counted by weighing the trees in bulk on several sets of scales in operation in the packing shed. Checkups have shown that this method is extremely accurate (more so than hand counting), speeds up shipping operations, and is one method of reducing unit costs of nursery operations.

The demand for particular species this year follows the pattern of recent years —with Scotch pine and white spruce in the lead, followed by Norway spruce, red pine, Japanese larch and white pine. No further orders for trees for this Spring's delivery can be accepted, as the supply has been exhausted.

What next?

We see in the papers that skin-diving ice fish spearing is illegal as far as the Michigan Conservation Department is concerned. It wouldn't have occurred to us to try this anyway, but apparently it *did* occur to two men who donned skin-suits and in 25 feet of water at Black Lake (Michigan, remember) covered with 16 inches of ice, speared two prize sturgeon weighing 20 and 22 pounds.

The Conservation Department of Michigan pointed out that the regulation on ice fishing states that spearing is legal *through* the ice, but not *under*.

June in January

You, too, may have a wildflower bloom in mid-Winter, if you follow simple directions something like this:

The pink lady slipper shown here was from the estate of C. G. Montgomery on West Mountain, Glens Falls, dug up with his permission around the Fourth of July after the bloom had gone but the leaves remained. It was set out in its own acid soil in a little plot three feet square near Chatham, and marked. After the first frost in late November or early December, it was transferred to a big enough flower pot, put in the cellar and watered thoroughly. It was given some light but no sun. A couple of weeks later it was given a little sun and more light. When the shoots appeared, it was moved into a warm room and given more light and more sun. It flowered in February and young Harry Sommer, Chatham Union Free School student, took the color picture from which this black and white was made. (Another pot contained three lady slippers.)

After this, it was given another freeze. It will be dug in out of doors and we hope it may bloom again naturally.

—Robert E. Leslie, *Chatham*

University Bunny

The University of Wisconsin has been credited with sending folks to great heights, and now no less an authority than George Knudsen of the Wisconsin game management division reports he saw a university rabbit up a tree.

Knudsen says he saw a cottontail resting in the crotch of a willow tree, five and a half feet from the ground. The tree had a lean of less than ten degrees and the bunny had apparently climbed up the rough bark. Knudsen went home and brought his wife—and the rabbit was still resting comfortably in the crotch of the tree.

The explanation might be that there are a lot of dogs on the university grounds, and this was an exceptionally smart rabbit.—*The North Woods Call*, Johannesburg, Mich.

Christmas tree business

Among the many letters which the Editor has received commenting (for the most part, favorably) on the article, "The Christmas Tree Business," by Leslie R. Stutzman in the December-January issue of The Conservationist, was one from James B. Cope of Earlham College, Indiana, son of the late Professor J. A. Cope, who was for many years Extension Forester of New York State at the New York State College of Agriculture, Cornell University. Mr. Cope pointed out that while some of the credit for the size of the Christmas tree business in New York State today should go to the Conservation Department, as Mr. Stutzman indicated, it was nevertheless a serious omission not to have given some recognition to the work which his father accomplished in developing the science of Christmas tree growing. Mr. Cope goes on to state: "His bulletin on Christmas tree growing is a milestone in this flourishing industry of which you speak. I hope there is some way in which credit may be given where credit is due."

It is true that Mr. Stutzman's article might have been more complete if some recognition had been given to the long and successful efforts of Professor Cope in developing cultural and marketing methods with respect to growing Christmas trees here in New York State. Certainly this Department, in its official statements and publications on Christmas tree planting and growing, has always taken pains to refer to Professor Cope's accomplishments.

A new oyster?

In the *Science News Letter* of February 12, we came across the following item which may be of interest to subscribers in the Marine District:

A common European oyster may bring a new and prosperous shellfish industry to the northern coastal states of the United States and possibly to Canada.

The imported oyster is now living and reproducing experimentally in some areas along the shoreline of Maine and in some well-protected bays and harbors of the Pacific coast states. It was introduced into this country because scientists thought that it could be raised commercially in water that is normally too cold for native oysters.

Results of five years of experimentation with the immigrant oyster were reported by Dr. Victor L. Loosanoff, aquatic biologist of the U. S. Fish and Wildlife Service at Milford, Conn., in *Science* (Jan. 28).

The European oyster, known scientifically as *Ostrea edulis*, was originally received as a shipment of 9,000 individuals in 1949 from the Netherlands.

New bow saw blades

The Bow Saw—with its thin, narrow, fast-cutting blade—is an excellent and popular tool for woods work in small timber. Here in New York, it is most useful for bucking softwood pulpwood and in thinning forest plantations. Like any other cutting tool, it must be kept sharp, for a dull blade is a widow-maker. The job of filing and setting requires both skill and time; the professionals figure to spend half an hour a day in keeping their blades in shape, and the amateur finds it better to have his sharpened and set by an experienced filer, even 'though it costs as least 50¢.

Recently, the Sandvik Saw & Tool Company (47 Warren Street, New York City) announced a new type of blade, made in Sweden. It is very narrow (only ¾" wide) and has two cutting teeth to each raker, rather than the usual four. The teeth are sharpened and set at the factory, then "induction hardened" so that the blades cannot be re-sharpened. Their useful life (without any sharpening) is about the same as that of softer blades sharpened two or three times. While the price is about double that of most other blades, the saving in time, filing effort and annoyance should more than make up the difference. This is especially true for those who, like most readers of THE CONSERVATIONIST, use their bow saws only occasionally and find it a nuisance to get them sharpened. With these new, hard-toothed blades, you just use them until they are dull, then discard them as you would a safety razor blade.

Wildlife marsh pays off

On January 28, firemen of the Pine Plains Fire Company, Dutchess County, were able to save a farm house from complete destruction by obtaining water from the Grassie Wildlife Marsh located about one mile from the scene of the fire.

Water brought to the fire in two tank trucks was exhausted on the fire with little effect and due to freezing weather no water was available near the house. No other fire company could get to the scene in time to help and the situation looked hopeless until Mr. Grassie, a member of the company, suggested that water might be obtainable from his wildlife marsh. A hole was cut in the two feet of ice just in front of the marsh dyke and water pumped into the fire truck tanks. This water saved the house from complete destruction.

The 5-acre Grassie Wildlife Marsh was constructed in 1952 through the 48-D marsh construction project. Since construction several broods of black and woodducks have been raised there each year and the muskrat population is increasing. This marsh definitely has made valuable contributions to the community.

Reported Deer

Adirondack Region

	1951 Antlered	1952 Antlered	1953 Antlered	1953 Antlerless	1954 Antlered	1954 Antlerless
Clinton	132	110	157	—	155	—
Essex	677	642	692	2	774	1
Franklin	1,081	1,295	1,225	1	1,477	2
Fulton	74	80	116	—	136	—
Hamilton	1,064	1,074	1,349	7	1,597	629
Herkimer (N. Zone)	482	519	628	1	1,022	568
Jefferson	33	65	50	—	102	—
Lewis	347	387	400	—	564	—
Oneida (N. Zone)	179	145	164	—	290	—
Oswego	104	126	182	—	209	—
St. Lawrence	1,406	1,472	1,629	3	2,065	547
Saratoga	114	92	121	—	145	—
Warren	315	199	299	1	314	1
Washington (N. Zone)	—	51	111	—	305	3
County Unknown	—	—	—	—	9	—
TOTAL	6,008	6,257	7,123*	15**	9,164*	1,751*

1954—Adirondack record includes N. & S. Zone kills for Herkimer, Oneida and Washington.
(* Archery included in total)
(** By archers *only*)

Catskill Region

(1952—16 days; either sex—2 days)

	1951 Antlered	1952 Antlered	1952 Antlerless	1953 Antlered	1953 Antlerless	1954 Antlered	1954 Antlerless
Albany	175	265	259	205**	1	258	5
Broome (split)	—	—	—	222**	1	—	—
Chenango (split)	—	—	—	71	—	—	—
Columbia	425	407	—	586	2	625	6
Delaware	1,173	1,569	1,039	1,284**	5	1,587	8
Dutchess	484	497	5*	658**	4	791	5
Greene	626	1,178	1,200	567**	3	648	7
Herkimer (S. Zone)	—	26	—	43	1	—	—
Orange	447	389	3*	523**	3	650	6
Otsego	643	757	734	631**	7	818	8
Putnam	208	243	1*	295**	5	477	9
Rensselaer	161	141	—	204**	—	248	1
Rockland	103	119	1*	105**	2	232	2
Schenectady	21	33	—	47	—	47	—
Schoharie	458	728	702	408**	3	459	7
Sullivan	1,302	1,330	5*	1,727**	23	1,747	8
Ulster	754	768	—	1,133**	16	1,148	10
Washington (S. Zone)	223	105	1*	131**	—	—	—
Westchester	26*	24*	22*	48**	29	73	38
County Unknown	—	—	—	—	—	6	—
TOTAL	7,229	8,579	3,972	8,888**	105*	9,814**	120*

(* By archers *only*)
(** Archery included in these county totals)
1954—Broome and Chenango kills shown under Central and Western. Herkimer and Washington (S. Zone) kills shown under Adirondacks.

The 1954 Deer Kill

HUNTERS reported taking more buck deer during the 1954 season than ever before in the history of the State. The reported buck kill of 28,565 exceeded by more than 5,000 the previous reported record of 23,552 in 1952. When last season's antlerless deer kill (1,963) most of which were taken by special licensees on the Department's experimental wilderness "two-deer" areas, is added to the reported buck take, the total of 30,528 deer is second only to the all-time high of 42,080 reported in 1952 when deer of either sex could be taken in 29 counties of the State.

But there's more to the story. The missing chapter concerns deer hunters in New York who take deer, but, for any of a dozen reasons, fail to report the fact to the Conservation Department. This "missing link" in the record has left the Department's game biologists in a situation comparable to that of a business firm endeavoring, without benefit of a complete

Take 1951-1954

Central and Western
(1952—6 days; either sex—2 days)

	1951 Antlered	1952 Antlered	1952 Antlerless	1953 Antlered	1953 Antlerless	1954 Antlered	1954 Antlerless
Allegany	816	919	1,824	572*	13	760	9
Broome (split)	489	400	704	201*	1	667	6
Cattaraugus	1,109	1,086	1,779	701*	26	865	11
Cayuga	130	177	214	96*	—	155	1
Chautauqua	813	792	1,428	558*	7	711	4
Chemung	329	275	487	235*	—	320	4
Chenango (split)	681	658	1,166	499*	5	940	9
Cortland	342	355	592	251	—	414	4
Erie	255	255	312	185*	1	292	3
Genesee	125	122	216	105*	—	137	3
Livingston	288	352	555	206*	1	279	1
Madison	304	204	4*	282*	5	478	3
Monroe	78	83	80	70	1	100	1
Niagara	48	36	49	47	—	57	—
Oneida (S. Zone)	—	23	1*	43	—	—	—
Onondaga	120	106	121	102	1	189	2
Ontario	268	320	591	224*	3	317	3
Orleans	71	76	184	44	—	88	3
Schuyler	259	211	360	189*	—	263	3
Seneca	83	65	84	40	2	106	1
Steuben	882	882	1,559	798*	6	1,041	3
Tioga	433	446	846	266*	4	494	2
Tompkins	338	311	482	231*	6	339	14
Wayne	95	103	81	77	1	94	—
Wyoming	266	263	390	168*	3	251	1
Yates	185	212	431	156*	—	226	2
County Unknown	—	—	—	—	—	4	—
TOTAL	8,808	8,732	14,540	6,346	86**	9,587*	92**

(* Archery included in these county totals)
(** By archers *only*)
1954—{Entire kill for Broome and Chenango shown above.
{Entire kill for Oneida shown in Adirondack region.

1953—31 Big Game take reports returned with incomplete information—not included in above.
1953—7 Archery take reports with incomplete information—not included in above.
1954—Of total antlerless deer kill, 213 were taken by archers.

1951 Antlered	1952 Antlered	1952 Antlerless	1953 Antlered	1953 Antlerless	1954 Antlered	1954 Antlerless
22,045	23,568	18,512	22,357	206	28,565	1,963

	1951	1952	1953	1954
GRAND TOTAL	22,045	42,080	22,563	30,528

in New York

stock inventory, to find out whether they are making money or going bankrupt. The comparison is very much to the point, for the white-tailed deer in New York is big business. Just on the basis of "cash on the barrelhead"—discounting the health, aesthetic and sporting aspects, discounting even the equivalent market value of the more than three million pounds of venison represented by the 1954 harvest—last year's deer season brought business people in New York State a return of about forty million dollars. When you're doing business on that scale every year, few will question the need for an accurate stock inventory.

This need has long been recognized and the Department, back in 1927, thought it had the solution when a bill was passed requiring those who hunted deer in New York to have a special deer license and, if they were successful in taking a deer, to report their kill to the Department on a tear-off portion of such license. Right away, 'though, human nature took a hand in the game. Every year since then a certain number of successful deer hunters have failed to report. Mostly it was inertia. There was no rush; plenty of time to get it in the mail—and the deadline came, and passed. Then it was too late, so why bother. A few never intended to send in a report anyway; figured the regulation was some sort of invasion of their private affairs. So, despite the fact that the majority were filing their reports in accordance with the law, game men still did not have an inventory of kill sufficiently accurate to give a true picture of New York's multi-million dollar deer resource.

The obvious answer was to develop a system which would establish the percentage of successful hunters *failing* to report; then these figures could be added to the reported kill. Investigation along this line in the early 1930's and again about 1940 had given some indication of this percentage but, beginning in 1950, game biologists tackled the problem in earnest. With the co-operation of Game Protectors and other field personnel, deer were checked in hunting camps, on car fenders, in freeze locker plants and all along the route from the woods to the table. Statisticians figured the size of the sample and regional composition needed for an accurate answer, reports were key punched on I.B.M. cards and run through the mechanical brain. The answer for last Fall's season: 75.9 per cent of successful Adirondack hunters reported; in the Catskills and eastern counties, 79.7 per cent; in Central and Western New York, 79.0 per cent. That's like finally locating 20 to 25 per cent of your money in the pockets of your other suit hanging in the closet. What this means in terms of deer can quickly be seen from the following chart for the 1954 season:

	Reported Deer Kill	Calculated Total Deer Kill
Adirondacks	10,915	13,365
Catskill & Eastern	9,934	13,029
Central & Western	9,679	12,155
Statewide total	30,528	38,549

What it means to the sportsmen of New York and to the Department's game biologists is that for the first time sufficiently accurate information is available annually and regionally on the *actual* harvest of deer. Problems remain in the management of our deer herd—plenty of them—but one big gap in the knowledge required to do the job successfully has been filled.

—A. W. Bromley

Salvage Report

BETWEEN noon of the 25th and daybreak on the 26th of November, 1950, a great wind from the East dealt the eastern half of New York the worst blow it had sustained within the memory of man. It wrought havoc in both private and publicly-owned timberland, but especially in the heavy softwood forests on mountain slopes in the Catskills and Adirondacks.

In January of 1951, the Legislature passed and the Governor signed an Act which added Subdivision 36 of Section 50 to the Conservation Law. This authorized the Conservation Department to remove from the Forest Preserve, through sale or with its own forces, the down and seriously damaged trees wherever a fire hazard had been created by such windfall. The Act expires June 30, 1955.

Immediately following the passage of this Act, field surveys were made of the damage caused by the storm. These indicated that over 200,000 acres of Forest Preserve lands had been seriously affected and that, unless some action were taken promptly to reduce the hazard, disastrous fires could be expected. It was recognized from the beginning that, due to rough topography and the inaccessibility of some of these lands, salvage operations would be very difficult — if not impossible. Therefore, the Department decided to direct its program toward cleaning up those areas which it deemed presented the most acute fire problems, and on which salvage operations appeared to be economically feasible. Obviously, the success of the fire hazard reduction program was dependent upon the co-operation of the wood-using industries, since the State had neither the equipment nor the manpower to undertake lumbering operations on such a vast scale. Furthermore, only the wood-using industries were in a position to use the materials thus made available.

The Department promptly sought and received the co-operation of industry in the development of a sound and practicable salvage program. During the years 1951 and 1952, outstanding progress was made toward this end. By the close of 1952, 135 contracts, covering fire hazard reduction work on 106,528 acres, had been negotiated. Unfortunately, in the Fall of 1952 there was a sharp decline in the demand for pulpwood. Many operations were curtailed, and in some instances it was necessary for the contractors to shut down completely; conditions did not materially improve during 1953. While every effort was made to find outlets for the damaged timber, it was impossible to locate a sufficient number of other markets to compensate for the lack of demand for pulpwood. During the past two years, the sale of timber has been confined largely to sawlogs for the lumber industry. While this industry has used a substantial volume of timber, the lack of large saw mills and of experienced timber operators has made it impossible for the State to maintain its fire hazard reduction schedule.

In 1952, stain made its appearance in the hardwoods, rendering most species unmerchantable. Deterioration of softwoods was apparent in 1953, and that year many of the companies refused to accept balsam. In most sections of the Adirondacks, the spruce continued to be merchantable although by 1954, deterioration was noticeable and a number of paper mills refused to accept this species. The degree of damage to spruce varies by areas. In some sections it is still salvable and we anticipate that the larger trees will be merchantable for sawtimber during the remainder of 1955 and perhaps even longer.

While the program has not progressed as well as we had hoped, the results have been gratifying in view of the many obstacles which have confronted the operators. As of October 31, 1954, some 169 contracts had been executed embracing 115,178 acres of blow-down. A total of 106 contracts have been fulfilled and 58,337 acres of fire hazard reduction completed. There still remain 63 uncompleted contracts, 16 of which were active as of October 31, 1954. During the past year, eight new contracts were negotiated. For the year ending October 31, 1954, some $97,253 was received from the sale of products, bringing the total receipts to $1,146,121.52. In addition, the Department has salvaged 1,858,476 board feet of timber for its own use, valued at $157,970.

But we do not wish to leave the impression that, as the result of salvage operations, the Conservation Department has reaped a rich financial harvest from the sale of timber. While there has been a substantial revenue from these operations, it must be recognized that the storm inflicted tremendous damage on many of the State's facilities. Repairs, plus the purchase of additional fire fighting equipment, the fireproofing of over 600 miles of trails, repairs to truck trails and foot trails, construction of additional foot and truck trails, technical supervision of contracts, additional Rangers for the high fire hazard areas, along with the hazard reduction work on areas which could not be cleaned up by industry—all these have necessitated the expenditure of large sums of money, much of which has been chargeable to the Forest Preserve Protection Fund. The following expenditures have been made from the beginning of the program to October 31, 1954:

Additional fire protection.	$ 91,696.97
Fire truck trails & fire trails	188,788.62
Recreation trails (marked)	81,370.13
Contract supervision & expenses	334,570.39
State clean-up	172,643.79
Total	$869,069.90

Recently $130,000 was segregated in the Forest Preserve Protection Fund for the purchase of land in the Adirondack and Catskill parks. It is impossible at this time to tell how much more money, if any, will be available from this fund for such purposes. Until salvage operations are completed and the Department

Deer and spruce

Recently Dr. A. B. Hatch of Syracuse sent in this spruce bough cut at Allen Pond near DeGrasse in St. Lawrence County. The terminal buds and the tips of some branches are gone—eaten by deer.

We checked with Bill Severinghaus, our deer specialist, and he explained. Deer normally will not eat spruce, in fact this species will grow up in the middle of a deer yard untouched. The area near DeGrasse is known as one of the deer starvation sections, and the browsed spruce is indicative of that. When pressed by extreme hunger, deer will eat the buds and occasionally the needles of spruce. They don't like it and it does them no good nutritionally. In fact, it may be their last desperate attempt to feed before they bed down and die.

Browsed and "budded" spruce may be interesting, but it reflects a condition we hate to see.

has determined whether or not additional clean-up work must be done by its own employees, no one can accurately forecast the financial picture.

This past Summer, Hurricane Hazel passed over the Adirondack region, doing serious damage. This was particularly noticeable where blow-down had been severe in 1950. A number of these areas once again have a substantial amount of down timber and must receive further attention. The High Peaks area was also hard hit by Hazel. Practically all of the fire control telephone lines were impaired, trails made impassable, and considerable damage was done to certain campsites. The Department immediately began the work of repair and rehabilitation, but it was not possible to complete all of it before Winter set in. Therefore, additional rehabilitation work will have to be done during this season. These expenses, which the Department could not and did not anticipate, will have a direct bearing on the final status of the Forest Preserve Protection Fund.

A number of the original contracts covering timber blown down by the 1950 storm have not been fulfilled and, undoubtedly, many of them will never be completed. Nevertheless, the Department feels that every effort should be made to keep them active for another year. In addition, the Department is faced with the problem of reducing the fire hazard resulting from Hurricane Hazel. Authority for clean-up work expires on June 30, 1955. Because of the above mentioned conditions, the Department is recommending that the time limit for hazard reduction work be extended to March 31, 1956, which should provide sufficient time to close out the work program now under consideration.*

Every year since the Great Wind of 1950, a substantial number of softwood trees have been uprooted by moderate winds, indicating that many trees which weathered the first storm were so weakened as to make them highly vulnerable. This condition may continue for several years. While it is not our purpose to alarm anyone, the fact is that the Big Blow—in spite of our best efforts to clean up after it—has rendered the Adirondacks susceptible to a disastrous fire. Within the Adirondack Forest Preserve there are large areas of blow-down which are still highly inflammable. Some of these areas have been closed to the public during the Spring, Summer and Fall fire seasons since 1950, but ever-increasing pressure is being brought to bear to open these areas to public use. It might be possible to work out some plan whereby they might be opened for restricted use, but with the proper weather conditions, one careless individual could very well start a holocaust such as has not been witnessed in New York State for nearly half a century.

While the Conservation Department is proud of its fire fighting organization and the excellent record it has maintained, we are fully aware that under the right conditions many forest fires have disaster potentialities, and that every possible measure must be taken to make the forests as safe from fire as is possible.

In 1953 the editor of one central New York newspaper, commenting on the forest fires then raging in New Hampshire and Maine, wrote that "this could not happen in New York." Let's not kid ourselves. It can happen here.

In addition, 85,000 BF in logs were used on various construction projects and have an estimated value of $8,500.

—W. M. Foss, *Director,*
Division of Lands and Forests

SALVAGE REPORT AS OF OCTOBER 31, 1954

Units	Contracts Executed	Contracts Unsold	Total
No. of projects	169	25	194
Acreage	115,178	67,465	182,643
Cords	248,696	235,425	484,121
MBF	35,920.5	8,425	44.345.5
Est. receipts	$1,073,824.85	$260,695	$1,334,519.85

SUMMARY OF OPERATIONS

No. of contracts started, including those completed	169
No. of contracts not started	4
No. of contracts completed	106
No. of contracts incomplete, including cancellations	63
No. of contracts cancelled	7
No. of contracts terminated	7
No. of contracts active in October	16
Acreage reported complete	58,337
No. of projects sold this fiscal year (4/1/54)	8
Income from all sales this year (10/31/54)	$92,553.42

TOTAL RECEIPTS FROM ALL SOURCES, AS OF OCTOBER 31, 1954

Products	Cords	Receipts
Softwood pulpwood	241,364.33	$721,593.82
Hardwood pulpwood	548.63	1,072.28
Total pulpwood	241,912.96	$722,666.10
Product	**MBF**	**Receipts**
Softwood sawlogs	30,432.528	$204,105.31
Hardwood sawlogs	9,669.608	110,869.80
Total sawlogs	40,102.136	$314,975.11

SUMMARY

Total pulpwood and sawlog receipts	$1,037,641.21
Local sale receipts	108,480.31
Total receipts	$1,146,121.52
Campsite salvage (estimated value)	$48,480.00
State salvage (estimated value)	117,990.00
Grand total	$1,312,591.52

DISTRIBUTION OF STATE SALVAGED LUMBER

Division of Fish & Game:	
Construction and repairs at fish hatcheries	71,066 BF
Division of Lands & Forests:	
Bureau of Camps & Trails—campsite repairs, construction at Thacher Park and Belleayre Ski Center	1,132,062 BF
Bureau of Forest Fire Control—repairs and construction of storehouses	231,043 BF
Bureau of State Forests—repairs	18,670 BF
Bureau of Nurseries—construction at nurseries	140,733 BF
Miscellaneous	66,832 BF
Division of Finance:	
Watertown headquarters, and miscellaneous	15,500 BF
Total shipped	1,675,906 BF
Inventory	182,570 BF
Total lumber manufactured	1,858.476 BF
Estimated value of lumber @ $85 MBF	$157,970

* Passed and signed by Governor Harriman.

Present Status of Gypsy Moth In New York

Defoliation by gypsy moth in mid-summer

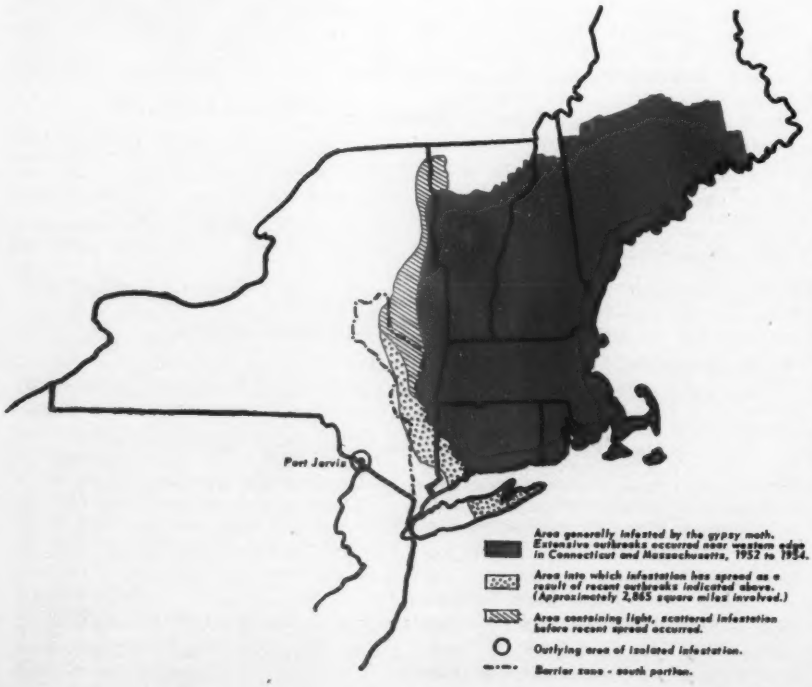
DURING the past several years the gypsy moth has been spreading in New York State, and in some areas has built up to extremely high populations. In 1951 the first defoliation was discovered in the Township of Dresden, Washington County and covered 675 acres. During the Summer of 1954 we had defoliation of varying degrees in some 10,000 acres of woodland in various locations in Columbia, Rensselaer and Washington counties. This was despite the application of spray on the maximum acreage our planes were capable of covering in one season.

Favorable winds during the larval seasons of 1953 and 1954 undoubtedly carried countless small caterpillars from the generally infested areas east of New York State in a southwesterly direction. As a result, light scattered infestations (consisting mostly of a small number of egg clusters) have been found in Dutchess, Putnam, Orange, Greene, Ulster and Schoharie counties, and in eastern Long Island, as indicated in the accompanying map. This dispersion of the insect, together with a recently discovered isolated infestation in the tri-State area (Pa., N.Y., N.J.) around Port Jervis, presents a very real threat to the vast areas of predominantly oak woodlands to the south and west. All concerned with the problem recognize that the gypsy moth must be stopped now before it invades this region of highly susceptible forest growth.

Due to the seriousness of the situation, the Regional Co-ordinating Committee on Gypsy Moth Control of the Council of State Governments, meeting at Boston on February 17, adopted a resolution stating, in part, that whereas of the 130 million acres of land susceptible to gypsy moth infestation, only 30 million acres are in the Northeastern States, and whereas the infested States of the Northeast are spending in the current year $1,350,000 for control and prevention of spread, it was the opinion of this Committee that a Federal appropriation of not less than a million dollars a year is required to prevent further spread of this pest.

Any expenditure made toward control at this time will undoubtedly be saved many times due to control expenditures that would be required if the gypsy moth is allowed to spread.

—BILL MASTERSON
and DAVE MITCHELL


Port Jervis
Area generally infested by the gypsy moth. Extensive outbreaks occurred near western edge in Connecticut and Massachusetts, 1952 to 1954.
Area into which infestation has spread as a result of recent outbreaks indicated above. (Approximately 2,865 square miles involved.)
Area containing light, scattered infestation before recent spread occurred.
Outlying area of isolated infestation.
Barrier zone - south portion.

Stewarts Bridge Reservoir

This reservoir, located on the Sacandaga River, just below Sacandaga Reservoir, was first filled in 1952. Reports from fishermen indicate that ice fishing there during the 1954-55 season has been surprisingly good for species including walleyed pike, northern pike and yellow perch.

Whether these fish originated principally from populations present in the river when flooded, or from young fed down from Sacandaga Reservoir, is unknown. In any case, it illustrates again the speed with which new reservoirs may be populated with fish under favorable conditions.

This reservoir has not been stocked, except experimentally with rainbow trout in the Spring of 1953. There seemed a fair chance that rainbows could utilize the favorable uncrowded conditions usually found in new reservoirs, and provide good fishing at least during the early years of this one. Field studies in 1954 indicated poor success with the trout, however, and it seems clear that this water should be managed for the warm-water species now well established.

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S. B. Brooks
1401 Elba Ave.
Troy 17, N. Y.

FOR EXAMPLE: This application for Mr. Brooks was processed March 24, 1955. He renewed for two years and Volume 11, issue 3 will be the last copy mailed to him. Spelling out this designation it is the December 1956-January 1957 issue. Six issues to each yearly subscription.

1955 convention

The 22d annual convention of the New York State Conservation Council, Inc. will be held October 6, 7 and 8 at Poughkeepsie on invitation of Robert Scott on behalf of the Dutchess County Federation of Sportsmen's Clubs.

Forest and wildlife work

Groups of workmen have been engaged this past Winter in thinning and pruning stands of 16- to 25-year-old red and white pine and spruce on eight Game Management Areas scattered over the State. Plantations of these evergreen trees, made in the late '20's and during the '30's, are now large enough to undergo a pruning in which lower limbs are removed to improve the future quality of the logs. In the process, some of the inferior trees are taken out so that the pruned crop will grow more rapidly.

These operations are carried out during the cold Winter months—when the trees are less subject to bleeding as a result of pruning.

In connection with the thinning and pruning of the evergreens some hardwood trees are cut down. These cuttings provide Winter food for deer and cottontail rabbits, and the sprouts from the stump in later years provide more animal food. Thus the operation has the dual objective of benefitting both wildlife and timber production. The pruned evergreens, while not ideal wildlife cover, are nevertheless used to a large extent—particularly where hardwood browse is available close by.

Areas affected by this pruning operation include: Partridge Run, Happy Valley, Tioughnioga, Bear Spring, Pharsalia, Connecticut Hill, Rattlesnake Hill and Hanging Bog.

How strong is a tree cone?

THE opening of the scales of a tree cone has always been an interesting natural phenomenon. Cones on evergreen trees are the structures which produce the seed. The cone is made up of a number of scales arranged spirally on the central axis of the cone, and botanists refer to these scales as a modified auxiliary shoot. Near the base on top of each scale usually two seeds are formed. Starting from the flowering stage, it takes from one to two years to develop a mature cone, the time varying with the species; with the spruces and larch a mature cone is produced in one year, while in the pines it takes two. Up to the time of maturity the conelet or cone is closed—that is, the scales lie flat against the axis. But when the seed is mature or ripe it must sooner or later be released, and Nature has provided a means to accomplish this. At maturity the cone scales, upon drying out (usually in the Fall of year) open up, thereby releasing the seed. The released seed with its attached wing falls from the cone and is carried away by the wind to start new trees.

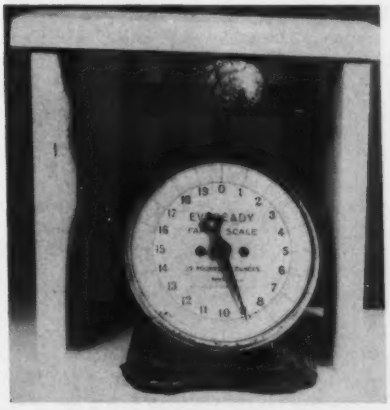
The mechanics of this cone opening and scale movement are interesting. Beneath each scale near the axis of the cone is a section of woody fiber. This fiber or "muscle" contracts in drying out like any piece of woody material, and during this process the outer portion of the scale is pulled away from the axis. Thus we say that the cone opens. But a cone soaked in water will again close within a few minutes, and in Nature the cones remaining on the tree will open and close alternately upon moisture conditions. The seed therefor is not all released at the same time.

The Forester who wishes to obtain a large quantity of seed for growing trees in the nursery takes advantage of this natural phenomenon. Fortunately, the seed in the cone ripens before the cone is ready to open on the tree, and the Forester collects the cones during this period —which varies from two to three weeks in the case of white spruce and white pine, up to a year or more. In fact, some of the pines have cones which remain closed naturally for many years and do not open well until a forest fire comes along.

Incidentally, our red squirrel operates about the same way. He collects and eats cones during the Summer season. As to the eating, he does it like a human munching sweet corn, except that he has to spit out the cone scales. As to the collecting, as Winter approaches he lays in a good supply, but does it before the cone opens and looses it seed. The ripe seed will keep during the Winter, and he cuts cones in great quantities and stores them away.

After the Forester collects the cones, he too stores them until they can be dried in the sun or in an oven. This opens the cones, and the seed is then extracted, dewinged, cleaned and stored in glass carboys in a refrigerated room.

How strong is the cone? That is how much pressure does it exert in the process of opening? Dr. Henry Baldwin in his book *Forest Tree Seed* refers to a German Forester by the name of J. Busse who in 1911 attempted to measure this force. Busse wrapped cones in glued paper and allowed them to burst the wrapping. After testing the strength of the paper, he estimated that a cone of Scotch pine could exert a force of 22 pounds.



In the test illustrated right above, a single cone of Norway spruce pushed on the scales as much as 9 pounds. Thus a cone — itself weighing only two ounces and using less than one half of its scales, registered a force of 144 ounces. The cone was picked from the top of a snowbank on which it had recently dropped from a tree. It was placed in position on Feb. 25, and seven days later it caused the scales to register the nine pounds. Seven and one half pounds was exerted the first three days, and the other one and one half in the remaining four days.

—E. J. ELIASON,
Asst. Supt. of Tree Nurseries

LETTERS

To The Editor

Fire maker

Dear Editor: The fire-making directions of your experts make me laugh. The right way to start a fire in the woods is to go down cellar and turn on the oil-burner. But there's no cellar and no oil-burner in the woods, you quibble. No, Bud, and in my woods there was no birch bark, no hemlock and in fact, no conifers at all; it was December so I couldn't tell which trees were dead and which merely leafless and anyway, there had just been a freezing rain and every pencil-sized twig was three inches thick with ice; and there was no daylight.

That was the first time I ever went camping, just before Christmas, in the Jersey woods, alone. I was carrying what I could borrow: a 5x7 heavy canvas wall tent, a bunch of blankets and quilts, a Hudson Bay axe, plenty of erbswurst and bacon, and enough other knicknacks to run the Poirier packsack up close to 50 pounds on the railroad station scales. I left the station at 3 P.M. filled with a city man's idea that it is afternoon until 6 o'clock, believed a native instead of a Geological Survey map, and wound up in just plain woods, in the gloaming.

After chopping into a few dozen down trees and finding they were just green ones felled by the storm, I decided a fire was impossible so I laid the tent on the ground —how can you drive stakes in frozen ground?—and made my bed on it. When I got too cold to bear it, I turned out and chopped wood, not for a fire but for exercise. I found it only took eight or ten easy strokes a minute, and I could even doze, sort of, while making them. When I got tired I went back to bed, and so on, all night.

In the morning I went by map to the lake which had been my objective, and had a swell time looking along its banks for a sheltered spot. Then I started making a fire. Between the root-buttresses of a big tree I found three perfectly dry leaves. From the undersides of ice-laden branches I picked a pocketful of dry twigs each as thin as a needle. I finally found a down tree that was really dead and chopped the whole inside of it into slivers from match-stick to lead pencil size. I accumulated a waist high pile of dry limbs with only a little ice on them. Then I lit one match, and the shade of old Dan Boone took off his 'coonskin cap to me.

I cooked and consumed, by actual measurements, one quart of thick pea soup, one pound of bacon, half a loaf of bread and one quart of strong black coffee. Then I made my way back to the highway, started off at 12 noon, pack on back and pipe in mouth, to travel 16 map miles, and pulled into the railroad station at exactly 4 P.M. in a gentle, sifting snowfall. I never felt better in my life and the exhilaration and joy of that hike through the woods on a still, gray day are as bright in my mind now as they were that day.

That was forty-two years ago, when I had just turned 20, but if I could do a little roadwork first to get used to the pack and harden my legs, I'd tackle it again and so would every other no-account, insane galoot who thinks it is fun to knock himself out going camping. I might not make it, but oh my boy, what fun it would be to try! If I could just keep out of that office Saturdays and Sundays———.

Sparse Grey Hackle, New York City

Wildlife first hand

Dear Editor: Imagine the fun of spotting the raccoon and 'possum in your last issue and reading about their habits, etc., on the train on the same morning that we encountered one of each of these animals on our four-mile ride to the station. We had had to brake quickly to spare the dawdling rascals from being run over.

Mr. and Mrs. John T. Coulin,
New City, N. Y.

Al. King and his maps

Dear Sir: I was interested to see in the recent issue of THE CONSERVATIONIST a very fine tribute to Al. King, and his work for the Department over many years.

In the Fall of 1924 he came to our camp in Indian Lake (Back Log Camp) and made an arrangement with my grandfather, Thomas K. Brown, to do a survey of our land. We must be only one of many people whom he helped in this way.

I have an old printed "greeting" (a form of advertising which we traditionally mail out each year to our old campers) which tells something of Mr. King's visit to Back Log. And it just occurred to me that his family might be interested to have such a souvenir of him and his work. I enclose this little folder, along with our current literature, with the hopes that you will forward them to his family, along with the warm best wishes of our Back Log "family."

This brought to mind a further question: I have a blueprint copy of the map he made of our land. It is inscribed: "A map of Lot Number 4 of the Maxwell tract, S.E. ¼ of Twp. No. 8, T & C.P. sit. in the Town of Lake Pleasant, Hamilton County, New York. The property of Back Log Camp, Inc., according to survey made in September 1924, by A. H. King, State Forester, to restore the original bounds thereof. Map and tracing by A. H. King, Mch. 1925." And in the lower corner the number #1509.

My question is simply, where is the original of this map, and how could we obtain additional blueprint (photostat) copies of it?

Warder H. Cadbury, New Haven, Conn.

• *We have the original map. Photostats of such maps can be obtained by writing the Department—which has an arrangement with a commercial firm here in Albany whereby the original is copied, and the subscriber billed for costs.—Editor*

Mining and prospecting

Dear Editor: In your February-March, 1955 issue you have an article "Mining and Prospecting in New York" by John J. Prucha. On page 12 there is a map showing iron ore deposits in Northern New York. Could you please send me the names and addresses of the companies working these deposits at the present time.

I am a chemistry student doing a working model of a blast furnace as a chemistry project. I want this information as possible sources of iron ore—something I have not been able to obtain. If you can direct me to any other sources of iron ore I would be truly grateful.

Bruce Matthew Gowens, Highland Falls

• *Currently three mining companies are producing iron ore in New York State. They are the Jones & Laughlin Steel Corporation, New York Ore Division, Star Lake, N. Y.; the Republic Steel Corporation, Lyon Mountain and Mineville, N. Y.; and National Lead Company, Tahawus, N. Y. All of the ores being produced are magnetite. The iron ore produced by National Lead Company is a co-product of titanium ore. The distribution of other magnetite, hematite, and limonite ores in New York is summarized in* "The Mineral Industries of New York State," *published by the State Department of Commerce.—John James Prucha*

Editor: I was reading the article about "Mining and Prospecting in New York" in the February-March, '55 issue. I came across several references to wollastonite and the fact that New York has the only commercial source of this mineral in the world. I referred to several chemical handbooks and an encyclopedia and found no more information than its chemical formula. I am very much interested in rocks, minerals and mining and would like to know more about this mineral.

Please send me some information regarding the location of the mine, mining methods and the use of wollastonite.

Michael Gochfeld, Peekskill

• *Wollastonite, a white calcium silicate, is mined from open pits about 2½ miles west of Willsboro, Essex County. The producer is Cabot Minerals, a division of Cabot Carbon Company, Willsboro, N. Y. After mining and careful milling into various commercial grades in the company's plant at Willsboro, the wollastonite is used for a variety of ceramic bodies and glazes, as a paint extender pigment, and as a paper coating pigment.—John James Prucha*

Dear Sir: As a long time subscriber to THE CONSERVATIONIST and as one who is engaged in the mining industry, I found the articles entitled, *Mining and Prospecting in New York* by John J. Prucha, and *Mining Laws of New York* by Percy Lieberman, in the February-March issue of THE CONSERVATIONIST, most interesting and informative.

In my present position with the Atomic Energy Commission, one of my responsibilities is dissemination of general information on the Commission's domestic uranium program and on prospecting for uranium in general. More than a thousand general inquiries are received in this office every month, and a large percentage of these inquirers are interested in uranium occurrences in the eastern part of the United States. In particular, they are interested in New York, New Jersey and Pennsylvania. As a result of the recent publicity given to the Camp Smith occurrence, and to other occurrences in Pennsylvania, many of these people also request information on the mining laws of New York and the means by which rights to mineral deposits may be acquired in New York.

Although I have a few copies of Chapter 872 of the Laws of New York available for dissemination to the public, I believe that Mr. Lieberman's article would be much more readily understood by the general public, and I would like to inquire as to the possibility of obtaining a reprint of the two articles in the February-March issue of THE CONSERVATIONIST. I would be interested in learning if a supply of, say one or two hundred copies of these reprints, is available and what the price would be.

W. J. Waylett, Chief,
Technical Services Branch,
Division of Raw Materials,
U. S. Atomic Energy Commission

• *Thank you on behalf of Messrs. Prucha and Lieberman. We will supply 200 reprints. —Editor*

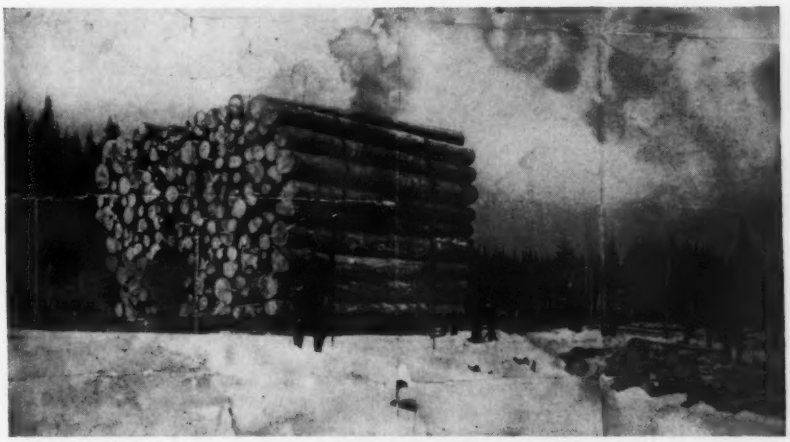
Trouble from rabbits

Dear Sir: It occurs to me that possibly your Game Pathologists would be able to throw some light on a matter which I have experienced, and possibly others have as well. In the Falls of 1953 and '54 I dressed a number of rabbits. Both years, after dressing several rabbits without any unusual effects, my hands experienced a stinging sensation when covered by the blood from an individual rabbit. Within twenty-four hours afterward on each occasion I experienced something similar to Poison Ivy, and it lasted approximately one week in each case. I have had Poison Ivy many times, but this reaction differed in the fact that it did not spread to the wrists or other parts of the body, but remained only in the area touched by the blood. Furthermore, although there was swelling and small lumps having the appearance of blisters, they did not break and spread the liquid to other areas. Temporary relief from itching was obtained by holding the hands in water so hot that it nearly burned the skin.

During the balance of each year I wore rubber gloves when dressing a rabbit, so do not know whether I would have suffered a re-occurance.

George S. Duryee, East Williston

• *I would guess that the blood of the rabbit had nothing to do with the appearance of the poison ivy symptons. On several occasions, while autopsying cottontails, I have developed cases of poison ivy simply from contact with those rabbits which by chance had recently been moving through patches of this weed. But I have no idea what could have caused the stinging sensation which you associate specifically with the presence of blood on your hands.—E. L. Cheatum*



Really loaded

Dear Editor: In the October-November issue of THE CONSERVATIONIST you showed a picture of an immense load of logs. I have a picture of a load of logs that you may want to print. This picture was taken on a job at the head of Cranberry Lake, N. Y.—that is, at the upper end of the lake and about 9 miles from the village. The jobber was George Bushey, and the picture was taken in the year of 1910 or 1911.

This information was told to me by an old woodsman by the name of Frank Trombley of Carthage, N. Y., who remembers the time real well. The logs were dumped in Cranberry Lake and put in booms and drawn by steamboat to the other end and taken from the water.

Mason J. Chaufty,
Carthage

• *Many thanks. This is the kind of material we really like to get.—Editor*

The Fonda wolf

Dear Editor: This account is taken from the Schenectady Gazette, Dec. 21, 1954:

Farmer shoots 53 lb. wolf about 3 miles from Fonda.

"A 53 lb. wolf was shot Sunday afternoon, about three and one-half miles northwest of the village by Glenn Saltsman, Fonda Rd. Saltsman was hunting with his son, Gerald, and Kenneth Showerman when Saltsman's foxhound flushed the wolf from a patch of woods off the Stone Arabia road near the farm of Newton Roblee.

"Saltsman shot the animal and brought it to town, where it was hung up before the E. C. Davis Newsroom for the public to see. William Diefendorf, Fort Plain, a Game Protector identified it as a wolf. It measured five feet from nose to tail, its shoulder height was about 28 inches, weight 53 pounds and color a grayish red.

"Another wolf is believed to be in the vicinity because two wolflike creatures have been observed bothering cattle and other livestock in the town of Mohawk.

"Saltsman said he planned to have the wolf skinned and the head mounted."

Glenn L. Saltsman, Fonda

• We have shown the photograph to a number of game men here in the Department and they agree that the animal is a coyote rather than a wolf. The tail is too long for a wolf, and the ears too pointed. We have published some information on the distinction between a coyote and a wolf in the magazine, and we enclose a tear sheet which may be of interest.—Editor

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The panther

Dear Sir: From time to time I have seen reference in your magazine to the possible existence of mountain lions in the New York area. From my point of view there is no question that they have been recent residents.

In the early Spring of 1946 or '47 I was fishing the upper reaches of the branch near Clear Pond in Essex Co. It was mid-morning, the water was high and I was trying to ease myself along the steep gravel bank. As I was making my way around a curve in the stream, I was startled by a sudden commotion on the opposite bank. As I looked up I saw a large animal in the process of trying to accelerate up the steep gravel slope. Its efforts brought a cascade of stones down the bank, some of them kicking out from under the large paws as though they were being thrown. In a moment it had disappeared behind the high bank.

I had obviously disturbed the creature in a mid-morning sun bath being taken on a ledge of conglomerate protruding from the gravel bank. The stream bed at this point is quite narrow and I had a full profile view thoroughly etched in my memory. The many pictures of mountain lions (panthers or whatever you may call them) I have seen since only has strengthened my conviction that that was the type of animal I so unduly disturbed.

My fishing partner will attest to the delayed shock which set in as I told him about it when I caught up with him about 30 minutes later. I still think about having to defend oneself from such a creature with a mere flyrod. It is not a happy thought.

I suggest you merely file this letter for reference. You may wish to have some data for the day when the necessary evidence is dragged into the office of your biologists.

Gordon P. Link, Galway

• That will be the day. But if we really do have panthers around, we'd prefer to see them alive rather than dead—for the time being at least. They (or the possibility of them) stimulate a lot of interest and fast talk.—Editor

Veneer

Gentlemen: We notice an item on page 39 of the Dec.-Jan. issue to the effect that the one sawn veneer plant in New York is located at Kimball Mill, etc.

This is to advise that we have been sawing veneer for several years, making both maple and birch. A large part of our product is used on high grade pianos.

H. C. Keegar,
Eaton Hardwood Co. Inc., Newcomb

• We are indeed glad to learn that your company is making sawn veneer, and have changed our records accordingly. The report of production by your company for 1952 indicated that you used an 18/64 inch headsaw and turned out 2½ million board feet of hardwood lumber. Nothing was said about a thinner saw, or about your veneer production. That's how I missed you.—Dave Cook

A. F. Tait, artist

Dear Editor: Enclosed find check for $2.00 for which please send me 4 copies of the Feb.-Mar., 1955 issue and renew my subscription for one year.

It might interest you to know that I intend presenting three of these to that number of grandchildren of the artist, Mr. A. F. Tait, who painted the original of picture "Trout Fishing on Chateaugay Lake" which appears on the back cover. Also that Arthur J. B. Tait (now dead), oldest son of A. F. Tait, was best man at my wedding here in Yonkers, Sept. 10, 1902.

John K. Lovell, Yonkers

Buckskin

Dear Sir: As a subscriber to your magazine I would like to know if anything can be done to protect the hunter from some unscrupulous houses that make jackets out of your deer skins.

I had been saving *our skins* (my son's and mine) for quite a few years. Also bought a few extra skins this year. All the skins were medium to large and not shot up. We had 8 in all.

We had 2 jackets made and were told there wasn't enough skin left to make two pairs of gloves. I wouldn't say all of these houses take advantage but I'm sure this one did. Can you give me any information on this subject.

Edwin Utter, Teaneck, New Jersey

• We asked George Lesser, a friend of ours and certainly a reputable taxidermist in Johnstown, just what it takes to make a buckskin jacket. He said the average requirement is four skins; one skin will make four pair of gloves.—Editor

The bass and the turtle

Dear Editor: Is it necessary to have a permit to shoot or trap turtles? I see no mention in the New York State syllabus regarding them. Last Summer there was a great number of them along the shores of Gull Bay on Lake George, from Spring to the first part of October. Although they are of some use in making soup (that is if you have the patience and know-how) I am told they also are of no use to small fish and fish eggs, which I understand they thrive on.

The bass fishing has fallen off greatly in the past four or five years (I caught just one last year, 13 inches long) and correspondingly I have noticed a gradual increase in our friend (?) the turtle. Just a few years ago we used to catch our limit about every day, with several four and five-pound fish included. Of course there may be other factors involved to cause such poor fishing, and before I unjustly accuse the turtle I would like to know the following:

1. Do bass eggs make up a big part of a turtle's diet, during the spawning season?—I have never been an eye witness to the turtle's actually eating them. 2. Do the turtles attack small bass (from under a year old, to two or three years old)? 3. Has the State ever taken steps—or let individuals take steps—assuming the first two questions are answered in the affirmative, to get rid of large turtle populations? 4. Could this overpopulation of turtles be just a cycle of Nature, which could cause just a temporary under population of bass? Or could it be a permanent affair unless some steps were taken by man to prevent it? 5. What information do you have on other slumps or periods of poor bass fishing—which I know have been experienced at other times?

Victor C. Murdock, Scotia

• *Snapping turtles are not protected; the "land turtles, box and wood turtles and tortoises" are completely protected (Sec. 194). On the questions:*

1. I wouldn't say never, but I wouldn't class the turtle as a fish-egg consumer. 2. Undoubtedly snappers will eat any small fish they can catch. On that account most fisheries biologists class them as generally beneficial predators. I think it would be a rare situation where they would be harmful to fish. In Lake George, for example, there are more rock bass, sunfish and perch to be caught than bass—and these need thinning. 3. Yes. "Snapping Turtle Control and Utilization" bulletin being forwarded to you. 4. I doubt very much that turtles have anything to do with decline in bass—if there has been a decline. Fishing can vary independently of populations.

Heavy fishing under favorable conditions may cause "downs" in bass populations in some lakes. Ups and downs may be caused by other things: spawning conditions; relations with competitors, etc.—C. W. Greene

Rhododendron

Dear Editor: Northern New York is not as much outside of the rhododendron zone as the comments on Bernard Przelski's letter in the December-January number might suggest. Near the summits of many Adirondack peaks attractive specimens of the Lapland Rosebay (*Rhododendron lapponicum*) are frequently found. I have seen particularly fine specimens on the top of Giant Mountain. When these charming little shrubs bloom in June they add much to the pleasure of a climb.

The fact that the larger native rhododendrons, *R. maximum* (as in Mr. Przelski's picture) or *R. catawbiense,* do not occur wild in northern New York seems to be principally because they cannot seed themselves due to cold or other unfavorable circumstances. Even small plants, of either *maximum* or *catawba,* will flourish if given favorable conditions. Growth will not be as rapid, however, as in southern areas. A northern planting of *R. maximum,* virtually in a natural state, can be seen at the White Pine Camp on Osgood Lake, Paul Smiths. Near the shores of Upper St. Regis Lake and Spitfire Lake several well-naturalized plantings, mostly of *R. catawbiense,* flower annually. In this area the writer has established a small ericaceum where rhododendrons and their relatives—natives, hardy southerners and foreigners, live happily without too much attention or coddling.

John B. Trevor, Jr., New York

Protected birds

Dear Sir: My grandson wanted me to write and ask if there is any law against shooting blue jays?

We feed the birds and enjoy seeing them near the house. One of our neighbors ties slices of bread near the house and then shoots them with a gun.

Mrs. Bertha L. Adsit, Taberg

• *In answer to your letter of February 1st, the only birds not protected in New York State are the English sparrow, starling, crow, great horned owl, purple crackle, kingfisher, sharp shinned hawk, Cooper's hawk and goshawk. In other words, the blue jay is a protected bird.—Editor*

They're cute, but—

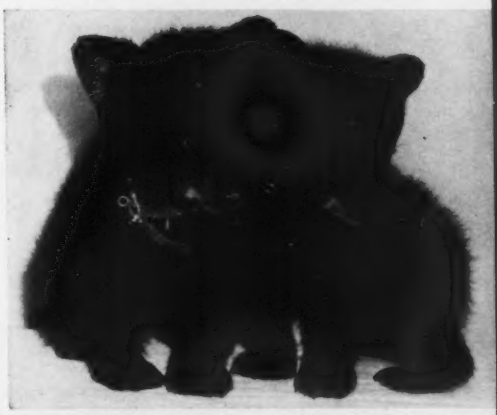
Dear Editor: Enclosed please find some proofs of pictures which were taken by Mr. Every of Long Lake, who thought you might be able to use some of them for your magazine. The cubs were taken away from the mother bear at Whitney Park by two residents of Tupper Lake, who were a few days later apprehended by Prot. Sevard and myself. I thought perhaps the danger involved and the damage done by picking up such animals could be pointed out in THE CONSERVATIONIST.

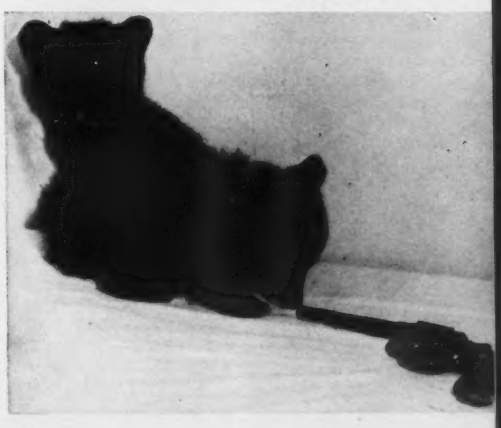
On the 23rd day of April (a year ago) Don Mace of Whitney Park saw an automobile parked on the Long Lake-Tupper Lake highway. Two men were trying to catch two bear cubs. Mr. Mace told these men that it was against the law and also very dangerous, and for them to leave the cubs alone. The mother bear was near the cubs at the time. After Mr. Mace had gone on his way, the men picked up the two cubs and took them in their car. Mr. Mace later told me that he thought the men had taken the bears. He had taken the license number of the car.

It was the 25th when I got this information, and after checking it out found the men were living in or near Tupper Lake. I then contacted Protector Sevard at Faust, and we found the men—who were Joseph E. La Montagne. Tupper Lake, and Robert Desmarios, also of Tupper Lake. They settled by civil compromise for the amount of $27.50 each, taking and possessing two wild black bear cubs during the closed season, without a license or permit so to do.

Protector James B. Hall, Long Lake

• *Good for you and Mr. Mace. But it's too bad that people have to learn the hard way that young wildlife should be left alone.—Editor*





Cats and dogs

Dear Sir: It is my theory that the supposed hearthside pet, the domestic cat, is more of a puss in seven-league boots than most of us suspect. I am convinced that it ranges far to hunt, destroying wildlife and property as it goes. At least that's what I deduce from incidents like this one:

A large and attractive cat, said by its owner never to leave her yard, limped into the house one day after an overnight absence. Clamped on the animal's foot was a trap owned by some youngsters who ran a trap line three-quarters of a mile away. The boys were berated for "setting the trap for the cat," but investigation proved their trapping was properly conducted, and that the cat had indeed visited the trap site. The cat was caught while it was removing part of a rabbit left near the trap for bait. The cat uprooted the stake, and not only traveled all the way home encumbered by the trap, but also carried the bait a quarter of a mile before parting with it. Of course it was fortunate that the cat was uninjured, but one speculates on other adventures of this "house cat."

Where can I obtain reliable, unsentimental information about the extent of the housecat's wanderings, and its standing as a predator? What are the facts on the cat as a carrier of rabies? What legal controls are there for cats? Has anyone in the field of conservation made a survey on this subject, or undertaken any research? The stomach contents of hawks and owls have been searched for evidence of undesirable eating habits, what would the stomach of the cat disclose?

Pat Barry, Ithaca

• *The only thing in the Conservation Law which has any bearing on this subject is to be found in Section 205, which states as follows: "Any person over the age of twenty-one years possessing a hunting license may, and game protectors and other peace officers shall humanely destroy cats at large found hunting or killing any bird protected by law or with a dead bird of any species protected by law in its possession; and no action for damages shall lie for such killing."*

Forbush, in Massachusetts, published considerable material on the role of cats in conservation, and you could no doubt find this in the library at Cornell.—Editor

Dear Sir: This letter is being written by request of several local sportsmen and dog owners. The question is this: Who can shoot a dog—and when? I was under the impression that only State Game Protectors and Rangers had the right to shoot dogs under certain circumstances; namely, running deer in a State park, and then only during March and April or two other early Spring months.

We have a large herd of deer feeding in this vicinity, numbering upward from a hundred. I am as interested in their welfare as the Sheriff's Department or anyone else. I also own dogs which I value highly. These dogs are kept shut up and so, unless one happens to get out, are in no danger, but here is the catch: There have been two or three notices in both the *Syracuse Post Standard* and the *Moravia Republican Register* telling people that they may shoot a dog running a deer. I know of one instance where some public spirited individual sat in his car, parked on N. Y. Route 38 and shot four or five times at a couple of dogs which happened to be in a field where deer had been seen before. (They didn't happen to connect with the dogs.)

Perhaps this is the law, but I can't believe it, and I agree with some other fellows who value their dogs; a quarantine, with a fine, might help. But he who shoots my dog, which is licensed according to law, better lay low and out of my sight!

Fred R. Matison, Locke

• *Section 195 of the Conservation Law includes the following: "1. No owner shall allow his dog to hunt, pursue or kill deer. No owner shall allow his dog to run at large on any enclosed lands on which birds or quadrupeds are possessed under license issued pursuant to any provisions of this article; or any state park; or state park reservation; or state owned game farm; or state owned game refuge; or state owned or leased game management area. Except on lands actually farmed or cultivated by the owner or tenant thereof, no owner shall allow his dog to run at large in fields or woods inhabited by deer outside the limits of any city or village.*

"It shall be the duty of every game protector, forest ranger and member of the state police to kill, and any person may kill, any dog pursuing or killing deer within the Adirondack and Catskill parks, or pursuing or killing any bird or quadruped on enclosed lands under license issued pursuant to any of the provisions of this article, or state owned game farm, or state owned game refuge, or state owned or leased game management area.

"It shall be the duty of every park patrolman, park ranger and member of the state police, county and town police to kill any dog pursuing or killing deer within any state park, county park, or state park reservation, at any time. Any game protector, forest ranger and member of the state police may kill any dog pursuing or killing deer anywhere in the state from January fifteenth to April fifteenth. Any member of any town police within the limits of said town, and any member of the Westchester county parkway police on any park, parkway or reservation owned or controlled by the county of Westchester or the Westchester county park commission, may kill any dog pursuing or killing deer from January fifteenth to April fifteenth.

"No action for damages shall lie against the person for such killing. 'Owner' includes a trainer or other person, possessing, harboring, leasing or using a dog."—Editor

Emigrant coyotes

Dear Sirs: Maybe this will be of interest to you, and maybe not, but in our last deer season (Nov. 14 to 28) four coyotes were killed and some others seen and heard in Windham County. It is believed they came over from your state.

Let's hope we can restrain their activities on our deer herd and other game.

Victor Benjamin, Brattleboro, Vt.

Cover painting

Dear Sirs: In regards to the front cover of your magazine of December-January, 1954-1955, I wonder if you could tell me where I could find some of those red berries in my locality. Also, would it be practical to decorate an urn with them in the winter time?

I saw your magazine at a friend's house and now I wish to subscribe myself. Please find one dollar enclosed.

William J. Derrick, Troy

• *Partridge berry is quite frequent in eastern and northern New York woods, especially beneath conifers. We've picked them, put them in a glass globe with moss and a little moisture, sealed the top against air. They keep for a long time, giving off and utilizing their own moisture over and over.—R.B.M.*

Dear Editor: Our copy of THE CONSERVATIONIST arrived belatedly yesterday and was grabbed up by my husband and two sons. Now they are at work and school and I have had a chance to study your lovely cover. I have a weakness for woods and snow and collect snow prints, so Mr. Hunter's painting would have appealed in any case, but it repays close and repeated scrutiny. He has the quiet of the pines under snow—with a warm feeling because of the sheltered spot and the partridge berries. I'll bet pipsissewa blooms there in summer.

Who is Mr. Hunter, and where does he paint?

Mrs. H. W. Bonsman, Scotia

• *Mr. Hunter divides his time between New York City and Columbia County (where the painting which he donated for our use was done). He can be contacted through us.—Editor*

"See anything Joe? Hey! Joe"

Dear Editor: During the month of December I sent you a cartoon along with a short note concerning the life of an archer. I am glad you found it to be interesting and a help to the future issue. They are fun to do (the cartoons) and if they bring a laugh without offense—they do serve a purpose.

You will find enclosed a potential "equalizer" for the archer's laugh this time (as well as any hunter who will admit to a case of "fever"). The cartoon, same as the last, is mine. If you can use it it's yours; if it doesn't meet a purpose, do with it as you wish—I've had my fun.

William Calhoun, AuSable Forks

Christmas tree growers

Dear Editor: In the December-January, '54-55 issue of THE CONSERVATIONIST there was an article beginning on page 2 under the heading of "The Christmas Tree Business in New York" written by Leslie R. Stutzman.

This article was of extreme interest to me because I have planted 30,000 trees through the past three years on my farm in Roxbury, Delaware County, New York. This has been done through the Conservation Department. I am sure you are familiar with this type of operation.

On page 2 of Mr. Stutzman's article, at the end of the third paragraph, he refers to "a recently formed New York State Christmas Tree Growers' Association having 100 members and rapidly growing." Since I own this farm in New York State with these trees on it, I feel as though I would be eligible to join this association. If you or Mr. Stutzman can put me in touch with the secretary of this association, I would appreciate it very much.

Carl E. Falkner, Demarest, N. J.

Gentlemen: Enjoyed the Dec.-Jan. issue very much. I'm interested in conservation and tree farming. Could you send me the address of the New York Christmas Tree Growers' Association. You mention this organization in the article "Christmas Tree Business."

F. J. Wolski, Board of Education, Buffalo

• *For further information about the New York Christmas Tree Growers' Association, we can refer you to the following address:*
Mrs. Virginia A. Drake, Secretary,
1255 Howard Rd..
Rochester 11, N. Y.

The cat family

Dear Editor: I was very much interested in the picture in your magazine of Dec. '54-Jan. '55—the picture and caption about lynx and bobcat.

I used to be a guide and trapper some in Maine, and have trapped both lynx and bobcats. There is a big difference between them. The lynx has long tufts on top of his ears and long whiskers; quite heavy. Also hind legs longer, and they stand higher than the cat and are darker colored. The two do not look alike.

Ernest A. Ham, Kansas City, Mo.

Wildlife marsh

Dear Editor: Last year I dammed up some land for a duck pond. This pond covers about 1½ acres of land. There were a lot of willow trees and some small underbrush in the area which is now flooded. Could you tell me whether I should remove this underbrush or if it would be all right to leave it where it is. The water last summer was from six inches to thirty inches deep.

I would also like to know if there is any literature available on duck ponds since I noticed three or four black ducks and a brood of young ones.

Michael Knabel, Syracuse

• *We suggest you leave the underbrush because it provides excellent cover for duck broods. We also suggest you encourage cattail growth if this plant introduces itself; in addition to providing cover for waterfowl, it is a preferred food for muskrats. And if there is a scarcity of woodland with hollow trees in the vicinity of your pond, the installation of a woodduck nesting box will improve the situation.*

For detailed management advice we suggest you contact the District Game Manager, 428 S. Salina St., Syracuse.—Roy Irving

Gun makers

Sir: For several years I have been compiling a check list of New York State gunmakers of the muzzle loading period which ended about 1880. I wonder if, through the pages of THE CONSERVATIONIST, I may ask your readers for any information they may have concerning these gunmakers, whose names are so rapidly disappearing? I should be interested to hear of guns stamped by New York makers, and I should particularly like to hear from descendants of gunmakers. Dates of birth and death are important to me, and I am always anxious to know where and from whom a gunmaker learned his trade.

I am particularly interested in definite information concerning two men, Morgan James of Utica and Amasa Belknap of Cherry Valley, both of whom were active until just after the Civil War. I shall be grateful for your help and that of your interested readers.

Holman J. Swinney, Sturbridge, Mass.

Back tags

Dear Sir: In reading the Dec.-Jan. issue of the best sports magazine in the country I see that two men, Messrs. Wallace and Fontaine, have lodged a gripe about the back tag we were issued last Fall to wear while hunting deer.

I also have a gripe, not about the wearing of the tag, but about the color of said tag. That bright yellow looked too much like the flash of a whitetailed deer to suit me, so I put mine in one of those plastic cases and painted the case with a thin coat of red airplane dope. This did not hide the tag so that it could not be read, but it *did* change the color enough so there was little danger of some trigger happy nimrod taking a shot at it.

If I may suggest a good color combination. I think that green with a black background or *vice versa* would be much less dangerous than yellow. I do not think that wearing the tag is anything to gripe about, as long as the color is right.

George V. Curtis, Clay

Dear Editor: More than 800,000 Pennsylvania hunters have worn the tags (and of various colors) for so many years that they would feel strange without them. And many of us definitely believe the tags do help to hold down the daytime violations in the field.

As for losing the tags while hunting, 20 odd years of deer hunting from Northville through to Potsdam revealed no terrain equal in brush to our Pennsylvania areas. So again I am expressing the hope that your Conservation Department not only keeps the tag on the big game hunter, but includes the small game hunter as well.

V. A. Hicks, Penn. Game Commission

Cover kodachromes

Dear Editor: 1. Where was the beautiful photograph at the bottom of the inside front cover of the Dec. '54-Jan. '55 issue taken? 2. Is there any chance of getting a larger print of it suitable for framing? 3. How about starting a practice of telling us where all the photographs of outdoor scenes in THE CONSERVATIONIST are taken? It shouldn't take up much space and would satisfy a lot of curiosity.

John C. Thomas, Wilmington, Delaware

• *The photograph referred to was taken near Chatham in Columbia County. You might write to Mrs. Irene M. Hefner, 8 Oxford Place, Westmere, New York; I'm sure she would be happy to help you.*

Ordinarily, we do try to identify our pictures, but in this instance of a second cover done in four colors, we did not attempt to do so; we were trying to suggest general Winter scenes. By the way, Mrs. Hefner supplied us with all the kodachromes for the page.—R.B.M.

Trout from Flowed Lands

Dear Editor: I enjoyed your "fish drop" story in the current issue of THE CONSERVATIONIST. I used to spend a lot of time in the Colden Country. Clint West was a good friend of mine, and I have had some wonderful fishing in the "Flowed Lands" and nearby ponds. Enclose a picture of one that came out of the Flow.

A. T. Harding Sr., Plattsburg

Slicing the melon

Dear Sir: In "Letters to the Editor," I read Clifford H. Hazetta's letter, and he seemed sore because he did not get a doe license this Fall. It made me think of a story that the hermit, Noah Rondeau of Cold River, told me.

I asked him how he happened to leave civilization and move into the woods to live. He said: "I'll tell you: If there were 5 of us fellows going into a water melon patch to get a melon, and there were only 4 melons, they would each get one and I would be left out. So I came to the woods alone—so there be no one to get ahead of me and I could have all of everything agoing."

I expect to hear of another hermit soon.

John E. Longware, Elizabethtown

Pilking in Norway

Dear Sir: With ice-fishing season upon us, I thought you might like to have the enclosed photo which was taken on Norway's largest lake at an ice-fishing derby last February. The pike pictured won first prize.

The most common lure was a "pilk" or tin-fish on the end of the line and above it, free on the line, was a small treble hook with red feathers. Jerking that lure up and allowing it to settle and then repeating the process was all there was to it. (A strong wrist helps.)

Strong wrists are required also to work the ice-drill that some use. I tried one which made a clean hole a little more than 4" in diameter. The cutting head looks like the lower half of a tablespoon, with the shaft attached to center.

I spent last year in Norway on a fellowship from the American-Scandinavian Association for the study of fisheries management and conservation. A "week on a whaler" was probably my biggest thrill.

Norman O. Levardsen, Assist. Professor,
Northern Illinois State Teachers College,
DeKalb, Illinois

We try, anyway

Dear Sir: Enclosed you will find my renewal for THE CONSERVATIONIST. I enjoy the magazine but have several suggestions to make.

First, I would like to see the attitude of the magazine one of true conservation, instead of apparently trying to produce more fish and game for the hunters and fishermen. It is realized that this attitude is necessary as long as the very life of the Conservation Department depends on the fees received from hunting and fishing licenses. Is it not possible for the Conservation Department to receive its fees as a direct appropriation from the State budget, thus giving it a feeling of independence and freedom? As it is the Department may be unwilling to sponsor any issue that is not approved by the sportsmen, and most of their efforts are concentrated on projects pleasing to the hunters and to the fishermen.

Those of us who are true conservationists are not the least bit interested in more game to be shot by the hunters, but in keeping our wildlife in its natural state, realizing that no specie is all good or bad and that if left alone Nature will work out its own checks and balances. Because the foxes, owls, hawks, bobcats, etc. are predators and must live on the socalled game species is no reason for their extermination. They are interesting to watch and study and have a place in the scheme of Nature. Man is the great upsetter of Nature's balances.

We would like to see more articles on Nature treated in a manner to give scientific content and to weave into the text the importance of planned methods of conserving all our rapidly diminishing wildlife and natural resources. This alone would justify the existence of your Department.

Dr. Newell R. Washburn, Endicott

• Yes, of course this is a publication of the Conservation Department. But we've tried hard to make and keep it a "well-rounded" magazine, of interest to all of those who call themselves conservationists—and also to many who don't. Sorry you've been disappointed.—Editor

Cabbages and kings

Dear Sirs: We enjoy your magazine very much. Enclosed find a check for $5.00 for which please send us an additional 5 years of informative reading.

We had a busy summer. My husband took a vacation in June and during the time he was off had an opportunity to go fishing. He caught lots of grayling and pike. My 13-year-old son had the honor of catching the largest fish of both species. He got a pike of 14 lbs. and a grayling 15¾" long. My husband got some good pictures of two caribou which were very obliging in allowing close-ups to be taken of them.

Our garden furnishes a good share of our winter's food. Our largest cauliflower weighed 12 lbs. 10 oz. while our largest cabbage was a whopper of 28 lbs. Can you top that?

Mrs. Arthur S. Farrance, McGrath, Alaska

• We won't even try. Thanks, and continued good luck.—Editor

Foxes and rabbits

Dear Sir: In our Field Biology course here, a question arose which I was unable to answer, and I wonder if you might help us out.

It has been observed by several members of the class while on hunting trips, that there are fewer fox tracks in the woods, and we wondered if this meant that the fox population was on the decrease in this State. However, we also noted that there are a greater number of rabbits this year, and that might mean that the fox might not have to travel far for his meals, and hence leave fewer tracks.

Could you please help us solve this problem with your data on wildlife activities in this State?

A. Walrath, Science,
State Teachers College, Potsdam

• It is quite probable that the red fox population is low in the sections that members of your class have hunted over. But while it is low in certain sections, it is very high in others. It is very seldom that the red fox population of the whole State is affected by either an upward or a downward trend.

The number of rabbits in a locality would have very little effect on fox activity. Foxes are usually very active during cold, still weather but limit their activities during periods of strong winds or mild weather.—Ed. Maunton

Another lynx

Dear Editor: Your story on the Canadian lynx in a recent issue: A friend of mine at Stony Creek, N. Y. (Warren County) trapped one measuring 54 inches. I think it was back in the late 1930's; anyway it sure was an ugly, mean animal. Contact Borden Vandusen or Arthur Baker, Stony Creek, N. Y. Excuse penmanship; am writing this against a tree outside of my camp. No other paper.

A. F. Zehner, Long Island City

• We're interested in the recent history of the lynx in New York, so we wrote these gentlemen. No answer.—Editor

Another one

Dear Sir: While thumbing through some pictures I found the inclosed photo of a strange 'chuck. The animal was shot by Dan Taylor of DeKalb Junction, August, 1954. As you can see in the photo, the animal has a very strange mouth.

The lower jaw had but two teeth, each approximately 2½ inches long which touched the nose when the jaw was closed. The upper jaw also had two teeth, each approximately 2 inches long but curving into the mouth and above the tongue. This obviously presented difficulty in feeding—which was evident in the very small size and grey color of the 'chuck.

Is is likely that the 'chuck is over a year old, bearing such a handicap?

Harold R. Stacy, Gouverneur

• We couldn't say for sure, but if he could survive for one year he could probably make it for two or three—unless, of course, the condition got worse. But of course we're just guessing.—Editor

All editors aren't dopes

Dear Editor: When I peruse the table of contents of Number 2, Volume 9 of my greatly admired CONSERVATIONIST, I find listed an article by Brother Littlefield entitled "All Hunters Aren't Hoodlums." Highly elated that N. Y. State hunters have at long last attained perfection, I turned to page 10 and then found that the author has flatly contradicted the statement of the title. He presents very strong evidence that many hunters are actually hoodlums—vandals very much given to the "kid stuff" of shooting holes in all sorts of metal signs.

This article very eloquently and cleverly demonstrates the folly and childishness of this type of target shooting and we'll hope it will reform many, if not all, of these silly, destructive and dangerous goons.

I interpret the conflicting caption and article as a grammatical "slip"—I believe the title was intended to read "Not All Hunters Are Hoodlums."

Henry N. Jones, Delmar

• *Brother Littlefield and the undersigned—and plenty of others here who play literary soccer—kicked this one around for some time before we settled on the title used in the magazine. You've got a point, but we think we came up with a provocative and less cumbersome title.—Editor*

So where is Cook County?

Dear Sir: You will probably get a mess of letters on this subject, but Cook County (Chicago, etc.) lies in Illinois, not Michigan. Michigan has no county named Cook.

And I wouldn't have thought there was enough standing timber in Chicago to have made it worthwhile making a Forest Preserve District out of Cook County, Illinois. All this refers to the top left hand paragraph on pg. 33 of your present issue (Feb.-Mar., 1955).

Richard V. Upjohn, New York

• *We not only got into a mess of letters; we got into a mess, period. But this isn't the first time, and it probably won't be the last. Nevertheless, Cook County, Illinois does have a Forest Preserve District (including Chicago).—Editor*

For the schools

Dear Sirs: All the teachers in our Science Department are especially pleased with the Feb.-March issue of THE CONSERVATIONIST. The articles on Prehistoric Mammals of N.Y.S. and Mining and Prospecting in N.Y. will be most helpful in teaching the geology unit in our seventh grade classes.

Each teacher would like copies of the articles in their files for future reference. Could we buy 5 copies of each article and the center spread, or 5 additional copies of THE CONSERVATIONIST (Feb.-Mar., 1955)?

Eloise Hadlock, Ithaca Public Schools, Head of Science Department

• *We would like to give them to you, but as of this writing we're obliged to charge 50¢ for single copies.—Editor*

Marine life

Dear Editor: I have a cottage on the Fire Island strip where my children and I have ample opportunity to hunt crabs on the flats of the Great South Bay. Of course we see horseshoe crabs, clams, innumerable snails, etc.

I am interested in obtaining publications and books relative to the life cycle of the various aquatic fauna indigent to the Great South Bay. My scientific background prepares me to handle the "heavier" type of publication, but if there are any that my wife and children can also enjoy, so much the better. Many thanks for any information you can give me.

Peter S. Lerner, M.D., Sayville

• *We recommend the "Field Book of Seashore Life", written by Roy Waldo Miner, published by Putnam & Co., N.Y.C.—Editor*

Dear Sirs: Would your office kindly give me information on how I can acquire state scientific papers on marine life and related subjects. In addition to writing for a number of western conservation publications, I serve as research director for a large federation of sportsmen's organizations.

Raymond Cannon, Los Angeles, Calif.

• *We do not have any State papers on marine life except our Biological Survey of Salt Waters of Long Island, 1938, which is available for 75¢ a copy. But we have had articles on marine life from time to time in our magazine, and tearsheets are being forwarded to you.*

May we suggest writing to the American Museum of Natural History, Curator of Fish, New York City; Mr. Wayne Heydecker, Atlantic States Marine Fisheries Commission, 22 West First Street, Mt. Vernon, N. Y.; The Woods Hole Oceanographic Institution, Woods Hole, Mass.; and the U. S. Fisheries Station, Woods Hole, Mass.—R.B.M.

St. Lawrence bass

Dear Editor: I note the stories appearing in the *Watertown Daily Times* indicate the best smallmouth bass fishing in Lake Ontario and in the St. Lawrence River region in years, with fishing boats returning with limit catches in a few hours. Would the recent drop in the lake level have anything to do with this?

James O. Parsons, New York

• *It is the opinion here that water levels have little to do with the good fishing. A better explanation might be that there were relatively few high winds during the season (excepting Carol and Edna). High winds, as you know, tend to roil up the water and drive the bass from the shoals.—Editor*

Any takers?

Gentlemen: From the standpoint of game preservation, you may be interested in advising your wardens and, perhaps, your sportsmen's clubs, that the writer is in the market for all the snapping turtles he can get, the year around. Under some circumstances, the question of economics may be an important one to certain of your citizens.

There are, of course, certain details to be worked out and the writer will be pleased to supply anyone interested with additional information.

John D. Burnham, Chadds Ford, Pa.

It ain't Superman

Dear Sir: You are doubtless interested in public reaction to your program for the prevention of forest fires. Toward this end, I am sending you this choice exerpt from a conversation overheard by my husband as he returned home from work one evening during the last war, via one of New York City's subways. The subject under consideration was a Smokey Bear Poster, and two city denizens were discussing it at great length, puzzled no end by the picture of Smokey.

"What d'you think it is?"

"It's a moose."

"Naw! A moose has horns."

"Well, Then it's a bear."

"Bears don't wear hats!"

"Oh I know what it is, then. It's a Forest Ranger!"

"That must be it. But you'd think he'd get a shave before he had his picture taken."

Mrs. Octavia B. Reed, Middleport

Carp control

Dear Sirs: Please find enclosed a picture which we think should be published and encouraged to no end. Carp control can be furthered by the constant pounding of many elements—including archery.

Hoping this may reach National Archers' Magazine and others.

R. Red Cornish, Rochester

For the cause

Dear Sirs: About a week ago I sent in 10 names for subscriptions to your CONSERVATIONIST. While reading my December-January issue during my lunch period at work, my co-workers got a look at it. Here come ten more names, and check enclosed.

Fred Mechlenberg, Akron

• *We thank you, sir.—Editor*

Credits

First cover, H. Wayne Trimm; second cover, Herbert Buckley; pages 1, 8, 12, 18, 19, 23, 24, 25, 26, Trimm; 2, New York City Board of Water Supply; 3, 6, 13, Roy Irving; 4, 5, New York City Board of Water Supply, Protector Robert Van Benschoten; 7, Warren F. Rathjen; 10, 11, Trimm, New York State Health Department; 14, 15, Trimm, Nick Drahos, Clayt Seagears; 16, Drahos; 17, Dr. Mildred E. Faust; 22, 23, Syracuse University Audio Visual Service; 27, William Bentley, Rochester; 29, Ellen Edmonson; 30, 31, Fred Mohn, *Ithaca Journal*; 32, 36, 39, Earl McGuirk; 33, Harry Sommer; 38, U. S. Department of Entomology, Trimm; 3d cover, Clayt Seagears; 4th cover, Trimm.

The Inside On The Outdoors Series

Spring Drummer

IN the marvelous season of Spring when the rays of a higher sun touch off the thermostats in Nature's living kingdoms, the wondrous reaction is demonstrated to us in countless ways. Among the most spectacular of these demonstrations is the courtship display of the expectant father bird.

Not *all* kinds of expectant father birds put on a fancy act to gain recognition in their endless battles of love and war. Some do no more than stand around and chirp faintly. These varieties are held in great esteem by many humans whose open bedroom windows adjoin those avian courting areas which apparently are most utilized at dawn.

Some males don't even court—like the phalarope, a snipe-like westerner. Clad in drab feathers, he just looks bored while the resplendent female courts him. He makes the nest and incubates the eggs while she scrams for an uninterrupted hen party.

At the other extreme are the fantastic birds of paradise, some two score kinds of which bedazzle New Guinea and the other equator-steamed islands north of Australia. The incredibly gorgeous male plumage patterns of these fabulous birds actually must be seen to be believed. And when they go into their nuptial antics, various segments of this shimmering finery is so extended, distended, up-ended and drooped that the bird may have no resemblance whatever to its normal self.

Incidentally, Walter Weber visited New Guinea several years ago to make sketches of these feathered jewels. On these he based the 16 superb paintings he made for the February, 1950 issue of *The National Geographic.* They're worth visiting your local library to see.

Anyway — along in between the male phalarope-the-dope (which does nothing from nothing) and the blue bird of paradise (which does his courtship dance upside down) are the familiar feather displays of the peacock, the strutting turkey gobbler and the ludicrous neck-bobbing act of the drake mallard.

But by far the most intricate and spectacular demonstration by any of our native birds is staged by the ruffed grouse. It is a versatile display in three parts: The drum, the strut and the locomotive.

The cock grouse struts at the drop of a hat and at all seasons—like the peacock. Even the hen grouse struts on occasion. But the male is most noted for his drumming, one of the most unusual actions in all the avian world. He'll drum all year 'round, too, sometimes even at night. But the intensity of this apparently combined courtship and temperamental activity is greatest in the Spring — late March through early May. It's then that the cock partridge becomes the cockiest creature in the woods.

Let's sneak up on one. It isn't too difficult.

First we hear the drum. Thump — thump—thump it goes at half-second intervals. Then faster, faster until the resonant sound blurs. The whole thing is over in less than ten seconds. It may be repeated immediately or at varying intervals, but most often in early morning or late afternoon. The sound is like that of a distant one-cylinder gas engine which suddenly slips its belt and takes off wildly before falling silently apart.

Often it is difficult to locate the drummer's stand—which may be a log, boulder or even (it is recorded) the carcass of another grouse. For the sound is ventriloquistic in its quality and has great carrying power in proportion to the amount of noise actually produced. But the chances are the bird is less than a few hundred yards distant. So we sneak cautiously ahead, finally moving only when drumming is in progress. We scan every likely elevation, particularly the stumps and larger logs. Then soon we catch the motion of his act.

The bird begins to strut but soon he flattens his feathers, sidles around a moment, then settles back on his heels with head high and flattened tail braced on the log behind. Then, thump!

With elbows in, he throws his wings, with rigid primaries distended like fingers, up, back and down again in a single baffling motion. This is so fast that the sound is produced by the concussion of the wings upon the air alone—like the crack of a bull whip. The quick sequence of the final thrusts is blurred to the eye like the buzzing wings of a humming bird.

(The small sketch shows the completion of a single thumping stroke with the neck feathers ruffled by the blast of air.)

Now suppose a captivated hen grouse lights near the drummer's seat. Instantly his action shifts. He hops from the log, stiffly fans his tail upward. His great neck ruff now encircles the high-held head. His wings droop (see painting opposite). Then slowly he approaches her. His excitement increases and furiously he pecks the ground. And then he stops. The third phase—least known of all—begins. He stands before her, neck lowered and thrust forward, ruff loose and partly extended, tail fanned. Suddenly he pivots his head from one side to the other, bill pointing forward, in a boring motion—faster and faster—each rotation accompanied by a loud hiss for all the world like a puffing locomotive getting under way. Then abruptly the head-shaking stops and with a final, prolonged hiss he makes a short rush at the hen. Usually, she never bats an eye. She wouldn't.

The stalking of a drumming grouse to watch this unique performance should challenge every outdoorsman. Yet surprisingly few report having seen this three-way display. This despite the fact that millions of ruffed grouse almost constantly go through the performance during April and May clear across southern Canada and in many of the states, particularly Pennsylvania, New York, New England and northern Minnesota, Wisconsin and Michigan.

Why does the grouse drum and strut and blow its boiler? Why does the bobwhite gain the same end result with, in general, merely a whistle? Why do the cock birds of paradise bedazzle their drab mates with weird contortion of super-elegant feathers while their near relatives, the crows, just mess around in sober black and yack? What queer twist causes the father phalarope to be so henpecked?

Who knows among men? But, brother, they're mighty fine subjects dreamily to dwell upon — come dogwood and lilac time. Man can do far *less* productive things those days than go forth into the peaceful, awakening woods and stalk a drumming grouse to see *for himself* that strange symbol of the exuberance of living. It might be catching.

—CLAYT SEAGEARS

Ruffed Grouse

MAGNOLIA WARBLER
MYRTLE WARBLER
CERULEAN WARBLER
PARULA WARBLER
CAPE MAY WARBLER
PROTHONOTARY WARBLER
AMERICAN REDSTART
OVEN-BIRD